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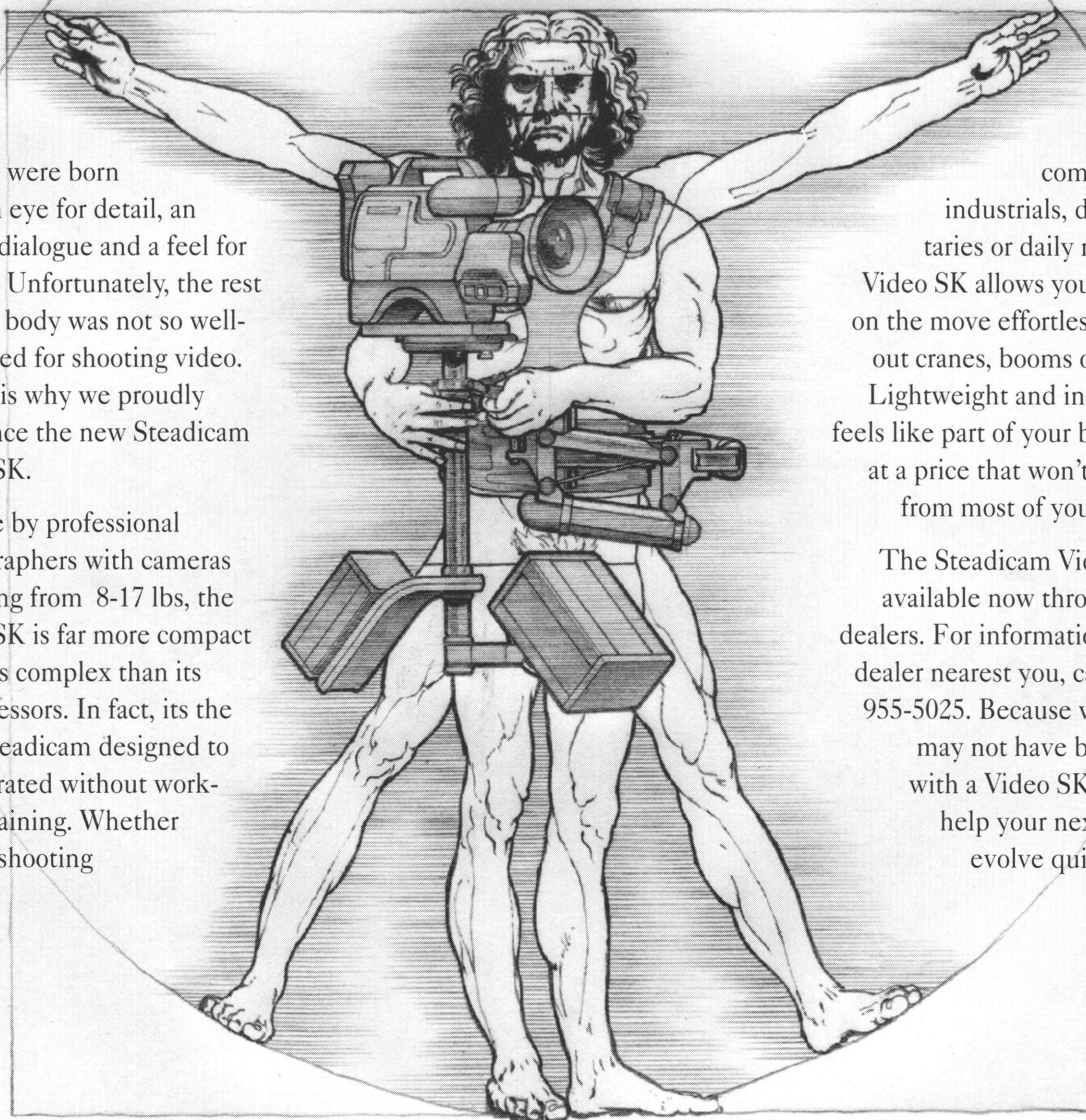
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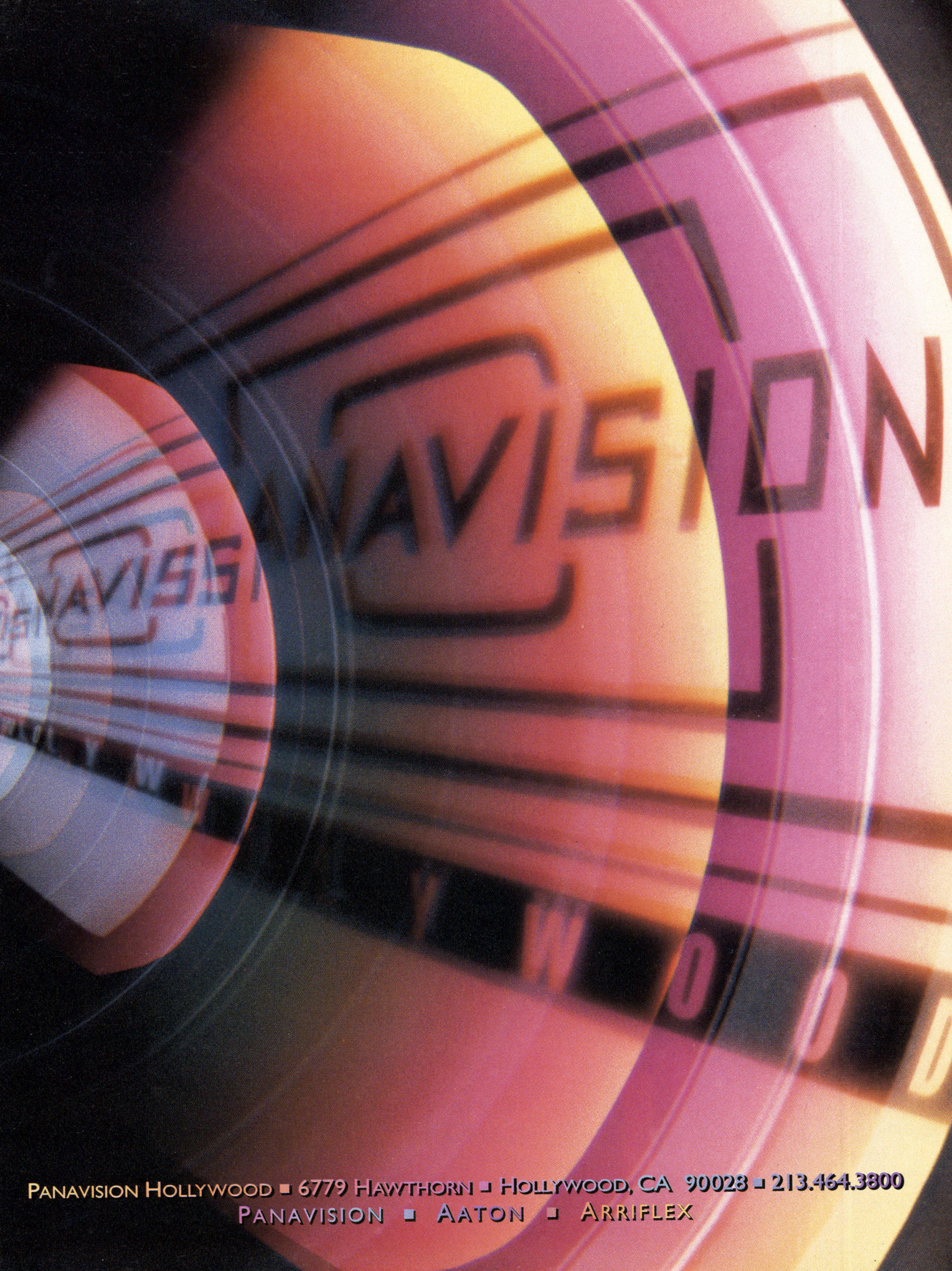
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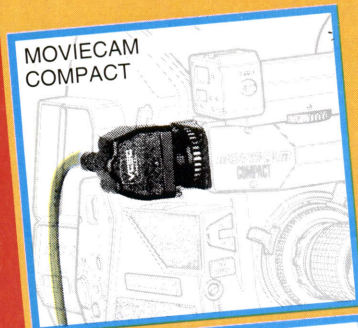
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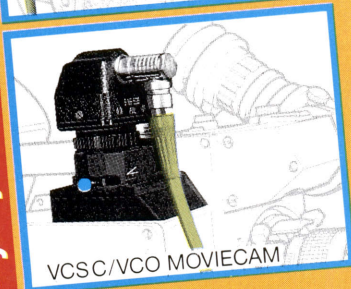
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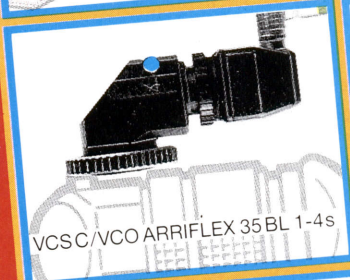
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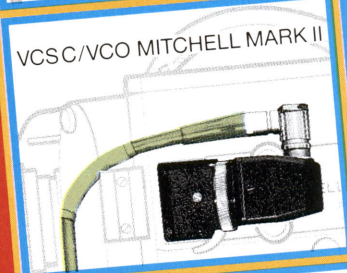
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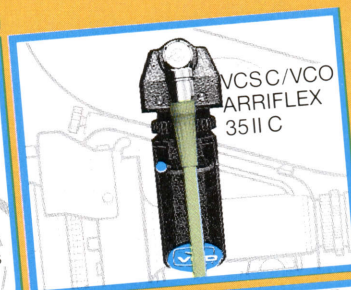
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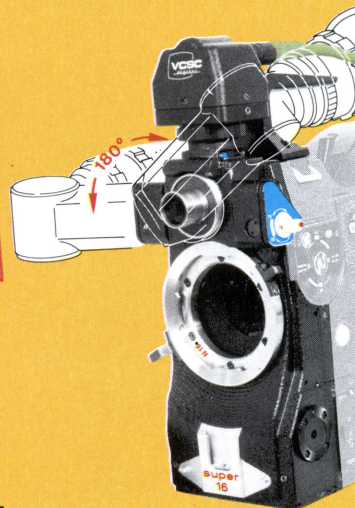
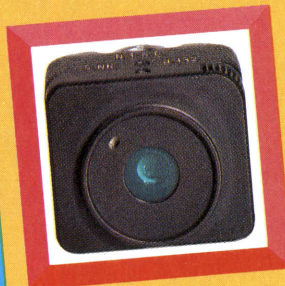
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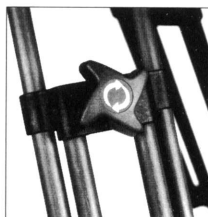
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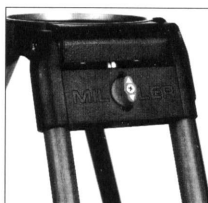
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Brianne Murphy, ASC

Director of Photography

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The American Society of Cinematographers is not a labor union or a guild, but is an educational, cultural and professional organization. Membership is by invitation to those who are actively engaged as directors of photography and have demonstrated outstanding ability. ASC membership has become one of the highest honors that can be bestowed upon a professional cinematographer — a mark of prestige and excellence.

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Director Of Photography Bojan Bazelli used Clairmont anamorphic lenses/cameras to shoot "Bodysnatchers"

Up to eight cameras working at once.
Arriscope anamorphics, plus
Angenieux, Cooke and Nikon sphericals
anamorphosed by Clairmont.

“Warner Brothers wanted a wide-screen format for *Bodysnatchers*,” says Bojan Bazelli. “So we shot some tests and projected them at Technicolor.”

New lenses

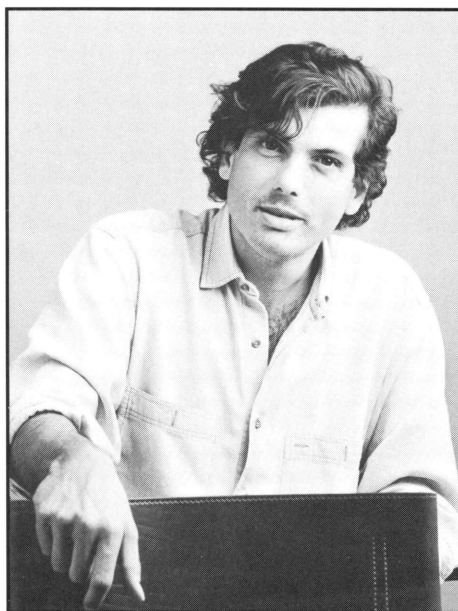
“I’ve been renting equipment from Clairmont since 1988. So I decided to look at the new Arriscopes and the other new anamorphic lenses at Clairmont. Those test results were astonishing.”

No falloff

“I associate anamorphic with some resolution falloff in the corners. But the Arriscopes were razor sharp, edge to edge. As always, you could see some difference as you stopped down. But even wide open, they were beautiful.”

No distortion

“And there was absolutely no curvilinear distortion with the Arriscopes. Straight lines were straight lines. On



Bojan Bazelli became a Director Of Photography in 1986, with *China Girl*. Since then, he has shot 17 more pictures, 12 Theatrical, 5 for TV. His four most recent pictures: *Deep Cover*, *Rapture*, *Bodysnatchers* and *Kalifornia*.

the Angenieux and Cooke zooms, residual distortion looked as low as before they were modified. Those are excellent spherical

zooms. As anamorphic zooms, they looked equally good — as good as any anamorphic zooms I’ve seen. Maybe better.”

Wide choice

“The lenses we took with us: the 40, 50, 75, 100 and 135mm Arriscopes and the 400, 600 and 800mm Nikon anamorphic telephotos; plus the converted Angenieux HR 50-500mm zoom and the converted Cooke 36-200mm zoom. We rented two sets of all the primes and telephotos, one each of the zooms. On some scenes, we had eight cameras working.”

Ten week shoot

“Our First Unit used a 535, with a BL4S in the truck as a spare. The Aerial and 2nd Units used Type 3s. Clairmont supplied us with video monitors modified to display the 2.35:1 ratio. We had a Power Pod and Titan crane that we used almost every day; and a Wescam mount helicopter. The shoot lasted ten weeks.”



The lens at the far left started life as a spherical 300mm Nikon. We modified it; it's now a 600mm T4 anamorphic. The lens at the back used to be a spherical Cooke 18-100mm zoom. Following our modification, it's an anamorphic 36-200mm T4.5. The Arriscope 40 and 50mm lenses are both T2.3.

Abandoned base

"The whole thing was shot at an abandoned Army base in Selma, Alabama. There was a theater at the base. To view the Dailies, we rented a Xenon projector with ISCO anamorphic lenses from a place in Atlanta, together with a thirty-foot screen."

1700 miles away

"Atlanta was about 200 miles from the army base. Clairmont was about 1700 miles away; but that didn't seem any further to me, because of the fast backup I've always had from the Clairmonts. I also felt confident that their equipment would perform, which it did."

Familiarization

"We had to learn the lenses. Every lens, anamorphic and spherical, changes image size when you rack the

focus. With some Arriscope focal lengths, that breathing was definitely noticeable in our tests. On the shoot itself, we blocked the action to hide focus changes; and we followed focus in small increments, with camera moves. We were happy to work with those lenses just to get those beautiful images on that thirty-foot screen."

Color matched

"Color-matching was perfect with all five Arriscopes, off the shelf. We didn't need to pick and choose. I used the zooms and the long Nikons only

for exteriors, where the color temperature varied anyway."

Edge to edge

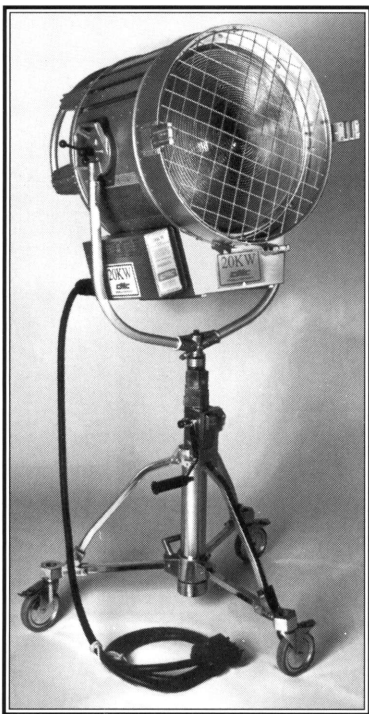
"Abel Ferrara, the Director, wanted very long-duration master shots, with several actors moving about to left and right within the frame. The wide-screen format lent itself to that style. So did the zero edge distortion in the Arriscopes."

"We had a lot of fun making this picture," says Mr. Bazelli, "Even working with lenses so heavy some of them had carrying handles!"

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Letters

Harry

I was devastated when I opened the January 1994 issue of *AC* and learned of the passing of Harry Wolf, ASC. This past summer I had the remarkable privilege of meeting Mr. Wolf and that meeting left a lasting impression on me.

Each year I travel to Los Angeles with a group of filmmaking friends to attend the ShowBiz Expo and visit the ASC Clubhouse. This summer, while we were appreciating one of the three-strip Technicolor cameras at the ASC, a benevolent man with a kind heart stopped to talk with us, sharing some technical facts about the old imbibition marvel. We immediately expressed our keen interest and the gentleman told us he was the last remaining member of the original camera crew for *Gone With the Wind*—but I failed to recognize him. So, I asked his name.

"Harry Wolf," he modestly divulged. My jaw dropped. I may not have memorized the face, but I *definitely* knew the name. For the next half hour, I was treated to a personal tour of the museum by one of the most distinguished and giving of cinematographers. I left the Clubhouse that day with an odd, warm sense that being a cinematographer must be one of the most rewarding of careers. I sensed that when a director of photography grows old, one doesn't become obsolete or tossed aside by young hot shots. Rather, the venerable cinematographer is someone revered and cherished for his experience and expertise. It struck me as being perfectly ideal that, even after setting down the viewfinder or light meter, a dignified cameraman such as Harry Wolf wasn't residing in a nursing home, but finished life sharing his passion for film with a group of young dreamers in a club blessed with some of the most inspirational individuals I've ever met. I just wanted to say thank you, Harry.

— Chris Probst
Mesa, Arizona

Ah, Perfection

PROOFREAD! Proofread, proofread, proofread! I had to pay enough to buy your magazine, it's the least I expect. In your October issue, you printed an exciting and informative article on Michael Ballhaus' cinematographic achievements in *The Age of Innocence*. It was all about Martin Scorsese's untiring pursuit of artistic excellence, and his and Ballhaus' meticulous craftsmanship. And on three occasions, when the reader tried to follow the text from one page to the next, the sentence became garbled and incomprehensible because no one had bothered to proofread that far. Well, kinda makes you look like idiots, wouldn't you say?

It gets worse. In the same issue, you ran an essay by Rebecca Redshaw, a plea for pride in one's work, no matter what it is. Ah, irony. Ah, incompetence.

— Jennifer Epps
Kitchener, Ontario

The three errors to which Ms. Epps refers were the result of last-minute corrections entered by me personally. As head idiot here at the magazine, I offer my apologies to our readers and to the author of the piece, Steve Pizzello. Each member of our staff takes great pride in his or her work. Generally, the quality of our proofreading and editing is two or three cuts above comparable magazines.

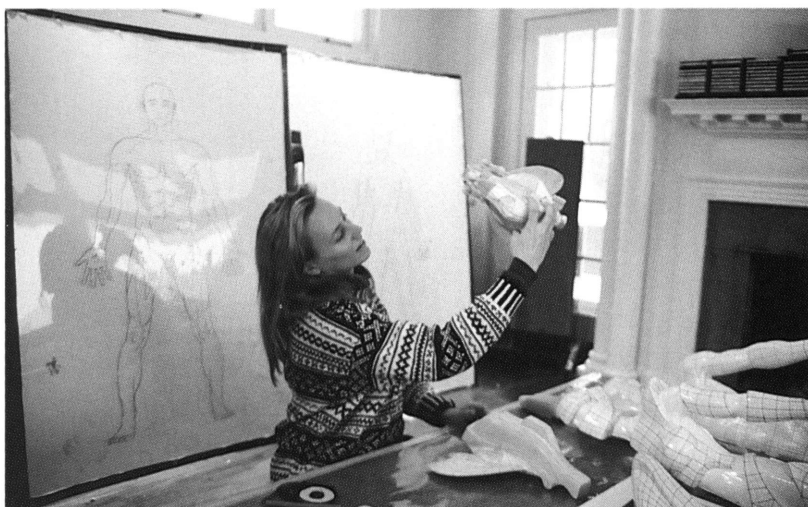
— Editor

Errata

AC would like to offer our sincere apologies to LP Associates, whose product photo we placed upside down in January's New Products column.

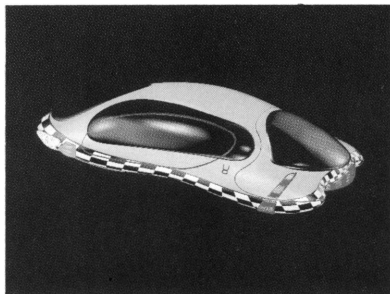
We'd also like to make amends for referring to IOF as the International, rather than Independent, Order of Foresters in our November Production Slate column. The number for information is (619) 550-2000.

About This Month's Cover

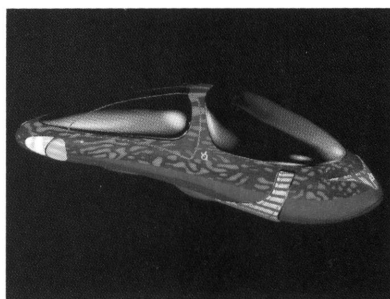


This month's cover features computer-generated imagery by Kleiser-Walczak Construction Company. The image is from *Theater of Time*, one of three special-venue films designed and directed by Douglas Trumbull and Arish Fyzee for Circus Circus Enterprises' new hotel, Luxor Las Vegas. Kleiser-Walczak created all of the computer animation for the three films, which include a motion-based simulator ride, an all-CGI stereoscopic dream sequence, and *Theater of Time*, a time-travel adventure projected in VistaVision at 48 frames per second on a seven-

story-tall screen.



Kleiser-Walczak assembled the production team for the Luxor project within the Trumbull facility in Berkshire County, Massachusetts. First, designer Sonny King built physical models in balsa wood to create the basic shapes of the vehicles. Kleiser-Walczak principal Diana Walczak is shown here defining the 3-D topology of the model for digitizing using a combination of Polhemus 3Space digitizing and patch modeling. Animators Ed



Kramer and Jeffery A. Williams used Wavefront Technologies software to create textures and interactive reflection maps to blend the aircraft into the background model shot and animate them to match the movement of the Trumbull motion-control gantry. Special software was written by John Haumann to create the confetti, and Wavefront's Dynamation particle system

was used to create the fireworks. In addition, Kramer inserted hundreds of Kleiser-Walczak trademarked computer-generated actors, Synthespians, onto the plaza areas of the motion-controlled model shot. The movement of the Synthespians was acquired using motion-capture software written by software development supervisor Frank Vitz. Elements were composited by visual effects supervisor Joel Hynek and digital compositing supervisor Serge Sretchinsky.

Kleiser-Walczak maintains computer animation and compositing facilities in Hollywood; Lenox, Massachusetts; Chicago; Boston; and Berkeley, California.

Trends Favor New Technology

compiled by Marji Rhea

Telezign, Pixar Unite

Telezign Computer Animation/Design, a division of National Video Center, has formed a strategic relationship with Pixar for new product development. As a Pixar planning site, Telezign will receive advance copies of new technology and products and integrate them into its animation production environment; Telezign will then give feedback on features that will enhance the capabilities of the software for broadcast and commercial design. At Pixar's invitation, Telezign has also joined the new Pixar Design Network, in which advertising, magazine, product, and interactive media designers use Pixar products to create design solutions.

Telezign's Emmy Award-winning designers will integrate Pixar's Academy Award-winning RenderMan technology into graphic design projects, and develop unique uses for RenderMan in animations.

For information: Alyse Dickman, (212) 564-8888.

New Digital Division

Steady Systems Inc. has announced the formation of its new Digital Technology Division, offering sales, training and rental for desktop production and nonlinear film editing systems and desktop video systems.

In conjunction with this new division, Steady Systems' corporate headquarters also features a Digital Technology Center to display and demonstrate this new equipment. The company's goal is to provide clients with a full spectrum of products that will take them from film transfers to dailies to an offline master cut. In the area of offline editing and desktop postproduction, Steady Systems has expanded its product line to include the Lightworks Editor and Avid's Film Composer. The company also has added an extensive line of hardware and software for desktop video, desktop preproduction and pre-visualization,

postproduction and video production graphics.

Steady Systems is currently an authorized Macintosh dealer. In addition to offering the Macintosh Quadra 950/800840AV, its available product line includes the Hewlett-Packard Scanjet IIc, Sony Mavigraph Color Printer, Apple LaserWriter Pro 630, Optima Tape Backup Systems and JVC CD-ROM Burner. It also offers an extensive line of monitors, including Mitsubishi Diamond Scan 20-inch, NEC, Apple, Radium 20-inch Intellicolor, and SuperMac 20-inch High-Res Color.

For information: Steady Systems Incorporated, 1014 N. Highland, LA, CA 90038, (213) 461-6868. New York: (212) 974-7666. Sydney, New South Wales, Australia: 02.438.1541.

Editing Service

Laser-Pacific's new online editing service for television, SuperComputer Assembly, delivers digital show masters at less cost than conventional online analog composite editing. It is not limited to any particular tape format, and is fully compatible with any digital component and high-resolution HDTV standards.

The service also permits greater scheduling flexibility, allowing producers to gain as much as a full day on their postproduction schedules. The service is already in use on such prime-time series as *Birdland*, *Phenom*, *Matlock*, *Mad About You*, *Babylon 5*, *Beverly Hills 90210* and *Melrose Place*, as well as a number of television movies.

The SuperComputer Assembly system's proprietary software fuels an IBM PVS computer and two massive hard disk storage arrays. Based on information provided by the offline editing systems, the audio and video needed for the final master is digitally captured from videotape machines onto the disk arrays at high speed. Once on the disk arrays, the finished program is output to a vid-

eotape machine in real time.

In developing the SuperComputer Assembly process, Laser-Pacific took the concepts of parallel computer processing and digital nonlinear editing and melded them into a unique application. The system allows for mass simultaneous digital capture, resulting in an acceleration of the assembly process. A typical one-hour episodic television show, which takes from eight to twelve hours to assemble in a conventional online suite, can be completed in two to three hours using the SuperComputer Assembly.

For information: Laser-Pacific Media Corporation, 809 N. Cahuenga Blvd., Hollywood, CA 90038, (213) 462-6266.

Getris Demo Suite

Metropolitan Entertainment, a video postproduction facility in Hollywood, has established a demonstration suite in the United States for the French-manufactured Getris animation systems. Getris Images manufactures a wide line of computer graphics animation systems, including the Studio Venice series for high-end applications and the lower-priced Eclipse series. Metropolitan's animation division, Hollywood Animation, will be using Studio Venice for its animated projects, which include the nationally syndicated cartoon series *The Bots Masters*.

The newest release of the Studio Venice software includes features such as morphing, which allows users to take increased advantage of real-time image manipulation and compositing, and dynamic paint, which utilizes complex user-defined macros, complete paint sequences and procedures that can be repeated or set into motion to create effects impossible or too tedious to perform manually.

For information: Metropolitan Entertainment, 1680 N. Vine St., #600, Hollywood, CA 90028, (213) 856-7060.

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Digital Sound for 16mm

FSU's Film Conservatory has developed a digital soundtrack system for 16mm film. The system, believed to be the first successful application with 16mm projection technology for public presentation, is similar in quality to that produced in the recent 35mm and 70mm theatrical release of *Jurassic Park*, which employed a digital CD-ROM system.

Ordinarily, a 16mm film employs a soundtrack printed optically alongside the film, next to the picture — a system "with which the FSU Film Conservatory has been extremely frustrated," remarks Dr. Brad Albers, Deputy Director of the Conservatory.

In February of last year, Dr. Albers, engineer David Gray, filmmaker-in-residence Frank Patterson and technical support assistant Sean Dunham began to develop a digital audio playback system capable of combining digitally rendered film soundtracks in a double-system style with a reasonable level of reliability.

In the system they engineered, the digital soundtrack is recorded separately onto a high-capacity computer hard disk, from which the sound is reproduced in double-system synchronism with the picture film in the motion picture projector.

Technically, the complete prototype system employs a relatively straightforward series of off-the-shelf interfaces which convert the tachometer output of the 16mm projector into the time code stream required by DigiDesign's SMPTE slave driver. DigiDesign's Pro-Tools software package, in turn, is synchronized to the SMPTE slave driver's output. The completed soundtrack for a film is stored as a mixed Pro-Tools file on a relatively large (1.2 gigabyte) hard disk drive.

For information: The Florida State University, School of Motion Picture, Television and Recording Arts, Tallahassee, FL 32306-4021, (904) 644-8747.

3-D Scanner

Keysler and Associates in Petaluma, CA recently worked with the Larson Company in Arizona to create life-sized models of dinosaurs for an exhibition in the Fernbank Museum in Atlanta. Albertosaurus, Talaraurus, Erythrosuchus, and Hadrosaurus models were scanned with Cyberware digitizers, and full-scale versions of the monstrous creatures

emerged, one towering nearly 25 feet high.

The Cyberware rapid color scanner enables a computer to record the shape of an object, be it a hand, foot, or dinosaur model, in a scanned format within seconds. The scanner reads 15,000 three-dimensional points per second, resulting in an image with a resolution as fine as 0.5mm. The scanned object produces a geometric model which can be manipulated in many ways within a software application. The scanning software allows users to control the model for use with popular 3-D applications such as CAD programs.

Face to Face is another company that relies on Cyberware to produce 3-D replicas of a variety of people and objects. Their specialized process begins with a Cyberware scan, 2-D photographs, vacuuming techniques and their own distortion technology. A photograph is laid over a milled model to create an uncannily realistic replica of the original object. Among other projects, Face to Face produces billboards, some with mounted 3-D car models, and bus shelter advertisements.

For information: Cyberware, 8 Harris Court, #3D, Monterey, CA 93940, (408) 373-1441, FAX (408) 373-3582.

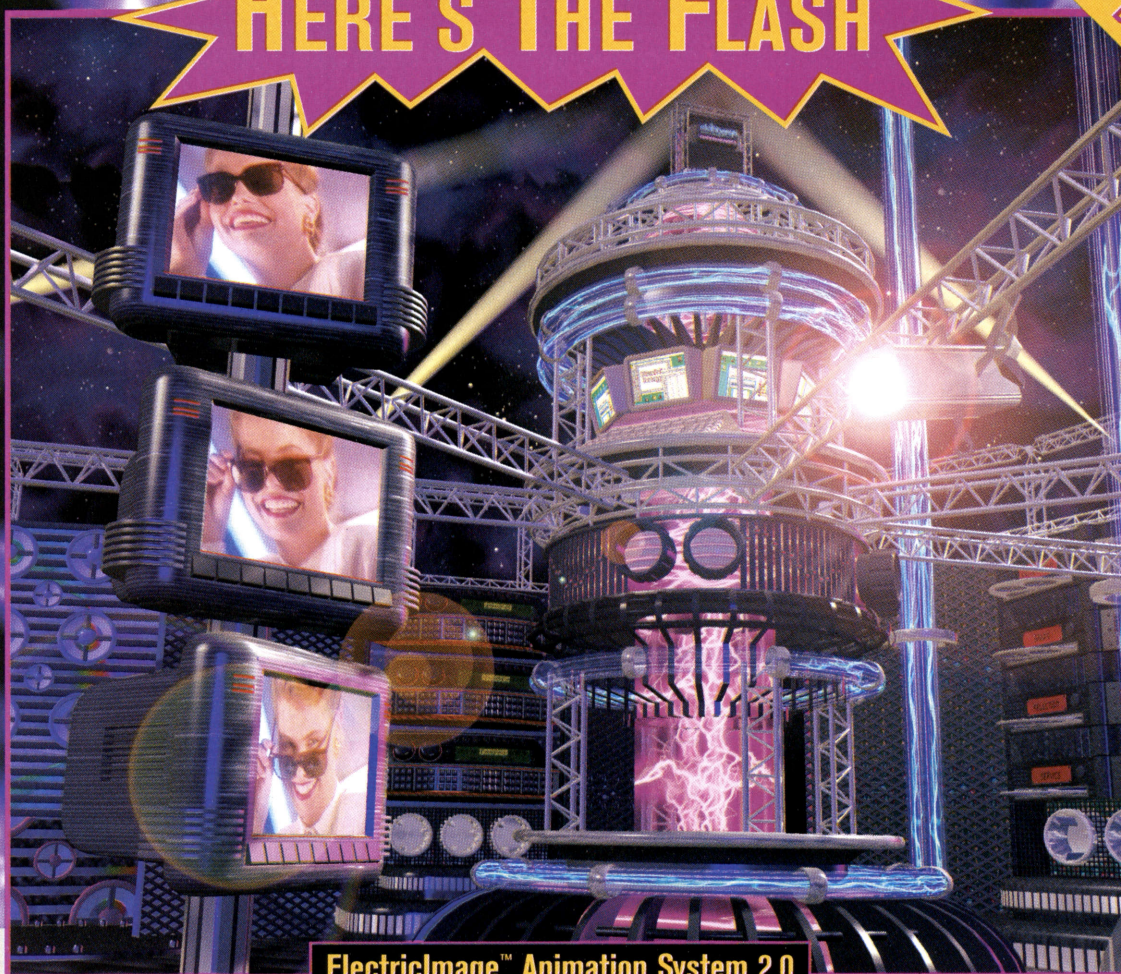
Applications Interchange

Lucasfilm Ltd. and Lucas Digital Ltd. announced that they are now official sponsors of the Open Media Framework (OMF) Interchange. In becoming OMF sponsors, the Lucas companies, which include Industrial Light & Magic, Skywalker Sound, and Lucasfilm Ltd., are solidifying their plans to develop all-digital postproduction environments within their facilities.

"Based on the Lucas companies' years of experience in the film, entertainment, visual effects and audio postproduction industries," stated George Lucas, "we are well aware that one of the single biggest barriers to creating a seamless postproduction environment for artistic freedom lies in the current level of difficulty users encounter when trying to exchange digital media between proprietary applications and computer systems. OMF provides the solution to this problem. We believe that the implementation of OMF-compliant products throughout our postproduction facilities will ultimately improve the creative process and greatly reduce the time and cost of completing projects."

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OMF Interchange is a standard file format that encapsulates all the information required to transport a variety of digital media between heterogeneous platforms and applications, as well as the rules for combining and presenting the data. The goal of OMF is to provide an improved creative environment for end-users involved with digital media productions and free them from existing platform and application limitations hindering the exchange of project information between digital audio, video, film, animation and graphics applications.

Industrial Light & Magic, Skywalker Sound and Lucasfilm Ltd. have identified projects in each facility where the implementation of OMF-compliant products will be tested. Following these tests, Lucas companies will begin actively encouraging vendors of additional products used in the facilities to integrate OMF support. The OMF Toolkit, from Avid Technology, will be used to integrate support into the targeted products. The OMF Toolkit is a software package that lets developers easily add support for OMF to any digital audio, video, graphics or animation application.

For information: Lucasfilm Ltd., P.O. Box 2009, San Rafael, CA 94912-2009, (415) 662-1800; Avid Technology, (508) 640-3158.

Digital Betacam Services

Audio Plus Video International (APVI) is now offering digital betacam services in both NTSC and PAL. Digital betacam is a component digital format developed to offer the benefits of D-1 at a cost-effective alternative. The units are capable of analog and serial digital I/O's and audio channels three and four are insert capable.

APVI, a Video Services Corporation (VSC) company, operates three facilities in Northvale, NJ and midtown Manhattan. Their services include standards conversions and duplication to all video formats. International postproduction services include NTSC/PAL multi-format editing, multi-standard digital film-to-tape transfers and video restoration. Audio capabilities consist of restoration, music and effects rebuilds, synchronization, layback, Automatic Dialogue Replacement and sophisticated audio-for-video editing. APVI also offers the I3 system utilizing a TK 3:2 to provide PAL standards conversion of NTSC-originated videotapes with a quality compa-

ble to an original PAL film transfer.

For information: Audio Plus Video International, 240 Pegasus Ave., Northvale, NJ 07647, (201) 767-3800, FAX (201) 767-4568.

Expanded Film Services

Fuji Photo Film USA Inc.'s Professional Motion Picture Products Division has consolidated operations at its Hollywood Technical Communications Center. The facility now offers warehousing of negative motion picture products, order services, sales and technical support, and a lobby and work area for Fuji Cine Club members.

For information: Fuji Photo Film USA, Inc., (714) 372-4303.

Editing Facility Opens

Zoo Production Services, a 24-hour Avid and offline rental facility, has opened in Hollywood. In addition to the three Avid 4000 and linear offline suites, the Zoo offers two screening rooms, client lounges, conference room areas, phone and fax service, convenient parking and complimentary breakfast.

Optional services include dubbing, sound services, Avid assistants, shipping, deliveries, and arranged meals.

For information: Zoo Production Services, 1027 N. Cole Avenue, Hollywood, CA 90038, (213) 468-1399, FAX (213) 468-1385.

Upcoming Events

Various dates throughout year: Sony Institute of Applied Video Technology Workshops, Los Angeles. Most can be brought on-site to your location. For information: Peggy Bado, (213) 462-1982.

March 1: Deadline for entries. Movies on a Shoestring: 36th Annual Rochester International Film Festival, Rochester, NY. For information: (716) 288-5607.

March 3-10: The Asian-American International Film Showcase, Bay Area. For information: (415) 863-0814.

March 5: "Pixels, Pictures, and Perception: the Difference and Similarities Between Computer Imagery, Film and Video," an all-day tutorial conducted by SMPTE, New York City. For information: (212) 757-4580.

March 4-13: Santa Barbara International Film Festival. For information: (805) 963-0023, FAX (805) 965-0557.

March 6-10: SIPI Professional Imaging Show sponsored by the Salon

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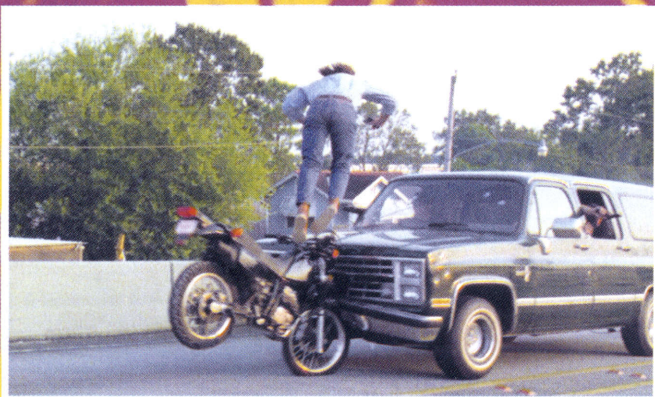
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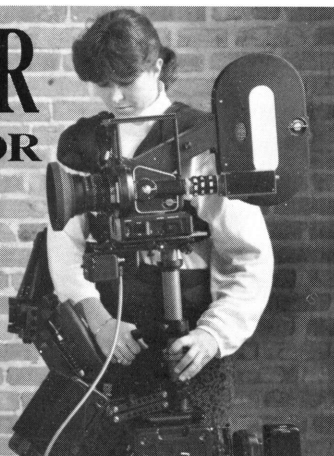
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International des Professions de l'Image, Paris. For information: Richard Perry and Associates, 35 Holland Terrace, Teaneck, NJ 07666, FAX (201) 833-4743.

March 15: Deadline for entries. The International Electronic Cinema Festival Chiba-Montreux 1994, June 6-12, Chiba, Japan. For information: Viacom International Inc., (212) 258-6363, FAX (212) 258-6354.

March 15-20: 32nd Ann Arbor Film Festival, Independent and Experimental 16mm Film, Ann Arbor, MI. For information: (313) 995-5356.

March 18-20: Robert Bordiga's Nuts & Bolts Production Seminar, New York City. For information: (800) 755-PROD.

March 20-24: 48th Broadcast Engineering Conference, 4th HDTV World Conference, and 2nd NAB Multi-Media World Conference, in conjunction with NAB '94, Las Vegas. For information: (202) 429-5478.

March 30-April 1: International QuickTime & Multimedia Conference and International Film Festival, San Francisco. For information: Sumeria, Inc., (415) 904-0808.

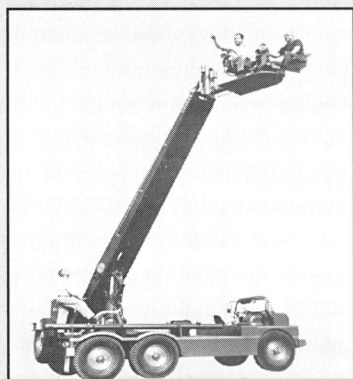
April and May: "The World in the Box: from Camera Obscura to Audio-vision," exhibit on projection techniques and the development of photography from the 17th Century to the present. Strauhof Museum, Zurich, Switzerland. For information: 0041.01.482.92.92.

April 3-10: Euro-American Festival International, Universal Studios Florida and other Florida locations. For information: Dale Olson and Associates Public Relations, (213) 932-6026, FAX (213) 932-1989.

April 12-14: New Media Expo, the Future of Interactive Information, Los Angeles. For information: New Media Expo '94, 300 First Avenue, Needham, MA 02194-2722, FAX (617) 449-2674.

April 12-14: Replitech International (conference and expo for duplicators and replicators of video and audio tape, optical disks and floppy disks), Munich, Germany. For information: (914) 328-9157, FAX (914) 328-9093.

April 25-29: Video Expo/Image World Chicago. For information: (800) 800-5474 or (914) 328-9157.



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Clearly, digital's age of innocence is over. The field now casts an imposing shadow over nearly every phase of the filmmaker's arc, from storyboarding to the final, frenetic bouts of editing. The sensational abilities of the new digital tools showcased in *Jurassic Park* provide the most fascinating flights of fancy for the layman (as well as the sexiest copy for the media), but digital technology's developing role as a veritable "911" for postproduction people is equally important. With a few deft taps on a keyboard, both human and technical glitches — pesky film scratches, perhaps, or a sloppy blood stain on an actor — can be erased with ease. In this article, AC examines how five companies thriving in the digital realm are exploiting the seemingly limitless possibilities presented by the technology of the '90s, and what some of their principals envision for the future of the Digital Age.

Lightworks

It's only natural for an experienced professional to feel some trepidation towards new technology, especially in a historically hands-on task like film editing.

"One editor who recently tried our system for the first time was very, very nervous," recalls Lightworks vice president Deborah Harter. "He actually got a piece of film and attached it to his desk, so he'd still be able to touch film! Only a week later, he called up his agent and said, 'I'm not ever cutting film again; I'm just doing Lightworks projects from now on.'"

It's a story that Harter takes obvious relish in recounting, but her intense faith in Lightworks' digital non-linear editing system has logical underpinnings. "I think one of the things editors like about our system is that they don't really have to change the way they work," she points out. "Our system is not so 'computerish.' These are creative editors, and they don't have any desire to learn how to be computer operators."

Harter attributes the three-year-old system's popularity to what she terms its "film-friendly interface," which allows editors to work on a screen with graphic representations of editing viewers that

behave in the way the viewers on real machines would. The user can work on as many viewers as necessary, arranged in any way desired within "virtual editing rooms" on the screen. Faster and more flexible than traditional machines, the computerized pictures and sound can be played, moved and edited freely, with separate control of sound and picture. "The idea is to arrange the screen to work the way *you* want to work, rather than having to adapt," notes Harter.

While commercials and television shows quickly gravitated to the precision and speed of the Lightworks system, the first feature film to climb aboard was 1993's *Kalifornia*. Since then, Harter

and run them in sync — the systems play catch-up every eight frames. Friedkin wanted to be able to look at everything instantly, so that he could compare the footage and see how it went together. If he'd had to wait and load up another reel, it would have added months to the project."

As the initial stage of what Harter terms a "three-year development program," the company is set to introduce a new and improved editing system this year called Heavyworks. "People are always saying to us, 'How do I know that the system won't be obsolete a year from now?'" she says. "The Heavyworks (prototypes of which were shown at SMPTE and

Forecasting the Digital Future

Five imaging companies map out their strategies.

by Chris Pizzello

says filmmakers have discovered the system to be perfect for handling problems unique to film production.

"Mrs. *Doubtfire* had tons of footage because Robin Williams kept ad-libbing!" Harter laughs. "The director kept shooting, and the editors had to keep cutting! *The Pelican Brief* started production at the end of May, and the studio wanted it ready for Christmas release. I don't think they could have done it with traditional machines."

Similarly, for director William Friedkin's upcoming basketball film *Blue Chips*, the director used 11 cameras to shoot footage of two separate games. "He ended up with about 200,000 feet of film!" Harter exclaims. "That's a lot to look at. On the Lightworks, he was able to look at all the footage, one camera at a time, or he could set up multiple viewers to look at them

the January ShowBiz Expo in New York) is designed to keep adding on features, so that it isn't just one machine, but a sort of platform from which it will be able to move in whole other directions."

Among the ways in which the Heavyworks differs from the Lightworks is the system's multi-camera setup. "You can run multiple cameras in sync in real time — at first six and ultimately maybe eight cameras, so editors can literally cut on the fly," she says. "Also, the Heavyworks will be approaching what is referred to as 'online quality.' The current best resolution on the Lightworks is 40 minutes per gigabyte of storage, while the Heavyworks already does 20 minutes per gigabyte. When you get down to what a Beta machine will be able to do, you're talking about four to six minutes per gigabyte, hopefully by the end of

this year."

Also unique to the Heavyworks technology, according to Harter, is its networking capability, "which will permit an assistant to load material at the same time the editor is working," she points out. "An editor would actually be able to play out two pictures at a time if he or she wanted, and ultimately this would lead to virtually unlimited storage."

She also envisions in Heavyworks' future "the ability to network other systems, so that a production can have multiple editors working on the same project—conceivably an editor in a completely different city will be able to access unlimited storage."

Harter feels that the incredible expansion of storage capabilities is perhaps the most exciting development in considering the future of digital editing. "It's possible that in five years you'll be able to carry your whole movie around on a credit card, or at least in a shoebox," she muses. "A year ago, we were using one-gigabyte drives; right now we're using three-gigabyte drives, and next year I expect to be using 18-gigabyte drives. You'll have unlimited storage eventually, and all you'll need is maybe a CD-ROM or a disk."

MetroLight

It is a manifestation of digital technology's mercurial growth that yesterday's Oscar-winning techniques are today's stodgy conventions.

The seven-year-old computer animation and effects house MetroLight won a special visual effects Oscar only four years ago for their work on *Total Recall*, for which they created an animated X-ray version of Arnold Schwarzenegger. Now, says MetroLight senior technical director Kelley Ray, "The whole technology has radically changed in the last few years. The methodology that was used in *Total Recall* was exceptional at that time, but now we wouldn't even consider doing it the same way."

A good example of the studio's (and the digital field's) rapid technical advancement is MetroLight's weekly effects work

for the futuristic NBC television show *Viper*, in which the title car regularly undergoes a smooth transformation from a red Dodge Viper into a gray high-tech armored "defender car." A concerted effort was made by the studio to get away from what Ray terms the "clichéd morph look."

"The client wanted to see actual mechanical transformations, sort of like James Bond's car in the early Bond films," explains MetroLight president Jim Kristoff. "We had to match the live-action movement of the car with our CGI."

After transferring live-action footage of the car to digital format, "we use video resolution-size images to do some fairly sophisticated rotoscoping," explains Ray, who serves as the show's digital effects supervisor. "When we're on the shoot, we keep very precise notes on camera location in respect to the cars, and we run lens calibration tests so that we have precise parallels to the 'real world' lens and camera. If we're using a motion-control system, we download the channel and axis information from the motion-control device and use it to create an identical move in our CGI environment. We are basically doing a 3-D rotoscope with a 2-D image. We've got 3-D digital models of the two cars so that we're able to look at a wire-frame or a smooth-shaded CGI car over a frame of live-action background plate. We adjust position on a frame-by-frame basis as necessary, so that we can actually fit the CGI cars very precisely over the real cars."

While continuing to branch out into new and still-evolving media, MetroLight hasn't forgotten the fertile creative territory of commercials. The company recently applied its digital prowess to an all-CGI theater trailer which integrated AMC Theatres' "Clip" character (made out of moving film strips) with an ice-filled glass of Coca-Cola.

"Coca-Cola agreed that it was better than doing it for real," notes Kristoff, "because we could get the angles we wanted and capture the ice melting. There was a whole lot more control than you could ever get with a live-action

tabletop shot. The other part is the character animation of the 'Clip' character. We actually used footage of Mikhail Baryshnikov jumping as a base to try to match 'Clip,' so it would look smooth in transition."

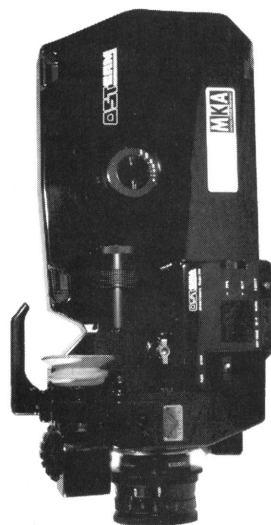
According to Ray, the two fastest-growing venues for

"It's possible that in five years you'll be able to carry your whole movie around on a credit card, or at least in a shoebox . . ."

MetroLight have been ride films and features. In the former category, the company has recently finished a 70mm Imax film that travels through the inner workings of a computer, while Ray categorizes a 70mm ride-film assignment for Dream Quest, completed last year, as a further push into the digital realm. "It was a seamless four and a half-minute piece with no cuts," he says. "We had to blend back and forth between motion-control shots, live-action shots and computer-generated shots, while a lot of computer-generated backgrounds went behind all of it. That was something of a frontier piece for the studio, and it provided a great way to keep moving in the direction of change that's going on all around us now."

MetroLight also recently provided effects for the film *Blink*, which periodically assumes the point of view of a woman (played by Madeleine Stowe) who is slowly regaining her eyesight after an operation. "We had to take the live-action shots and distort the imagery in a way that was convincing, rather than just weird," Kristoff explains. "In this case, we used the computer not necessarily to create imagery but to distort it, which would have been impossible to do with the camera. We had some conversations with people who had suffered eye injuries, but mostly we tried to relate it to what someone would see underneath water, that sort of distorted look."

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"I suppose there are ways of doing these scenes with gels or liquids in an optical process," he adds, "but you're not going to get the control that you get in the computer. You have total control of every pixel, as well as the timing of everything that's happening in the scene. The director can get more of what he wants, rather than just accepting whatever happens with a technique in the 'real world.'"

Kristoff predicts that "someday down the road we'll have real-time frame-grabbers capturing imagery on the fly at very high resolution in digital form. You'll be able to go back to your studio, dump the imagery into your system and see a film all together in the computer."

In envisioning the digital challenges of the future, Ray can detect a vicious circle of sorts, ironically caused by his and his colleagues' own ingenuity. "The visual sophistication of the public is growing at an incredible rate," he says. "The tools that are available allow us to do more and more complex, realistic and imaginative things, but the public catches up very quickly with their sophistication. Somehow, we're going to have to keep leapfrogging ahead of them."

Cinesite

"You can never use the word *indispensable*," emphasizes a cautious Marty Shindler, vice president of sales and marketing for Cinesite, when asked if that word could apply to the imaging center's various digital services for commercials, features and special-venue films. "No one and no company in this business is ever indispensable. After all, a movie studio can just cut a scene out of a picture, or use a flawed scene anyway. When I talk to low-budget production companies, I ask, 'Don't you ever have a problem like a scratched negative?' And they say, 'Yeah, but with the kind of movies we do, we just leave it in!'"

Keeping that in mind, the year-old company continues to perfect its bread-and-butter services of film scanning and recording, serving in this capacity for a variety of upcoming films that include *True Lies*, *Stargate*, *Interview*

with the Vampire, *The Shadow* and *Terminal Velocity*. Meanwhile, the company is also working to expand the scope of its digital abilities with complex visual effects and compositing, as well as a revolutionary new technique called the Digital Backlot.

The company has also made a confident entry into the realm of image manipulation, especially in what Shindler terms "fix-it" work. "I believe in Murphy's Law," Shindler says. "A problem is going to happen. The fact is, with today's compressed postproduction cycles, there isn't a movie in Hollywood that doesn't have a crunch period at the end."

"We had an instance from a movie trailer in which there's a guy and girl, both in bathing suits," he describes. "Neither of the actors were presented suitably for a general audience preview, so we were able to take the woman's bathing suit, which was a very small string bikini, and digitally paint the problematic parts of her body at a workstation. The man's bathing suit was somewhat see-through, so we also corrected that, put the scene back to film, and were back in business."

The company's trouble-shooting potential could be a logistical boon to many trapped productions, as in one recent case when the producers of a forthcoming film discovered during postproduction that their film negative contained severe scratches. "Often, the producers will tell their insurance company, 'Pay up: we want to reshoot this scene on your time because the negative is covered by the insurance policy,'" Shindler explains. "That works a lot of times and a lot of directors like to reshoot scenes. In this particular case, however, the actress in one of the damaged scenes wasn't pregnant when the scene was shot, but she was when they went back! It would have been pretty difficult to reshoot that scene. We were able to digitally scan their original film, get rid of the scratch and then convert it back to film."

Cinesite's image manipulation abilities aren't limited solely to such emergencies. The techniques used in films such as *In the Line of Fire* and *Demolition Man* are well documented. And along with

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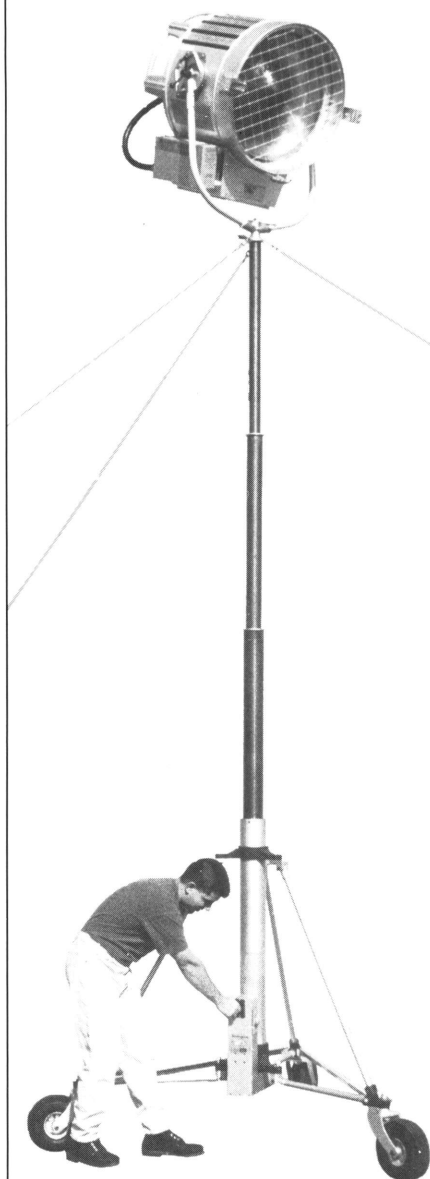
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partnering house CST Entertainment Imaging Inc., Cinesite is aiming for an even more profound effect on the film industry with its recently announced Digital Backlot, which provides filmmakers with pristine versions — in black & white or color — of historic footage that can be integrated into any contemporary production. Some of the software for the Backlot was previously used for the acclaimed restoration work Cinesite performed on last year's re-release of *Snow White and the Seven Dwarfs*. Cinesite is able to digitize old film and enhance images in such a way that dirt, dust, tears and scratches can be cleaned off the negative, with grain structure adjusted accordingly.

"A movie producer or director can do a lot of things with that piece of film," Shindler points out. "It could be used as an establishing shot to set up a particular point in time or a particular place. Many traditional establishing shots are either very generic or they're matte paintings with little if any movement in them. But for one project right now we're using a shot of Times Square circa 1925, with people walking, trolley cars and automobiles, and the rhythm of neon lights that only Times Square has. We can also put actors who were shot on blue or green screen into the picture, so it doesn't have to be an establishing shot — it can be an important part of the movie. Directors can add acting, dialogue, sound and sound effects."

Cinesite provides a digital DST or Exabyte cassette to CST, which will then add color to the images, returning the digital information to Cinesite for recording back to film at high resolution. Shindler believes the Digital Backlot, which is already being used on a pair of projects (including a test for a film using 33-40 minutes of vintage Buster Keaton clips), could lead to an entirely new storytelling dimension. "There's a huge inventory of settings and period locations that just don't exist anymore and which are available on black & white film," he maintains. "Not only do we see it as an effective tool for work being done today, but we think that writers

can begin conceiving pieces that they could not have conceived before. With digital technology, there are no boundaries to what can be done."

Kleiser-Walczak Construction Co.

In the ultra-competitive world of digital effects, it is rare to find a "less is more" approach. Yet it is this kind of pared-down production philosophy that has ironically made the Kleiser-Walczak Construction Co., coming off their acclaimed work for Doug Trumbull's special effects attractions at the Luxor Pyramid, one of the fastest-growing digital effects/computer animation houses in L.A.

"We've developed a strategy which I think makes sense," maintains co-founder Jeff Kleiser. "We don't want to become a big factory; we only want to do two or three large projects and have a dedicated team of people assigned to each project. If your client has a major project, we can come in and do a 'computer graphics house call.' We move in and set up our equipment, and our staff people aren't distracted by other projects. It's as if the client has its own computer graphics department."

Since the company's inception in 1987, Kleiser and partner Diana Walczak have developed proprietary systems for the creation of computer-generated actors called "Synthespians," lifelike figures (based on a clay model by sculptor Walczak) capable of recreating actual human movement that has been captured in digital, numerical form within the computer. Kleiser-Walczak successfully utilized the Synthespians for the Luxor project.

In 1991, the company produced 12 minutes of computer-generated cosmic visualization of phenomena such as black holes and swirling gases for the PBS series *The Astronomers*. Recent feature-film work includes *Honey I Blew Up the Kids*, *The Pickle*, the new computer logo for Columbia Pictures and the upcoming science-fiction film *Stargate*.

Kleiser says that *Stargate* is a good example of the company's all-consuming approach. In providing special effects for the \$60



William Friedkin

Photo by Bob Greene, Paramount Pictures Corporation

For the current Paramount Pictures theatrical release, "Blue Chips," director William Friedkin filmed four unrehearsed, actual basketball games. The games featured the top college basketball talent along with NBA superstar Shaquille O'Neal.

When the games were completed Friedkin had two hundred thousand feet of basketball footage, shot with thirteen cameras without head or tail slates and a problem—how to cut it down without an army of assistants or several months delay.

"We knew we had to get an electronic system to get the best possible results," says Friedkin. "I looked at every other system and I wasn't impressed...until I got on the Lightworks. Lightworks was the most flexible in terms of options."

The way Friedkin would normally work is: Lay out the sequence with the editor then come back the next day to see the results. "With Lightworks I can stay there and see it immediately.



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"Lightworks suggests a multitude of ideas for composing the film. You see choices that can be made very quickly. The presentation is fast and so is the operation. The system changes the rhythm of the way you edit. You edit so fast, you don't have time to get coffee."

Although the Lightworks was brought on solely for the basketball footage, this quickly changed. "We ended up cutting three-quarters of the film on the system.

"We couldn't have finished "Blue Chips" on time, or as well as we did, if not for the Lightworks."

"Blue Chips" stars Nick Nolte, Shaquille O'Neal, Mary McDonnell and Ed O'Neill, and features NBA rookie superstars Anfernee Hardaway and Calbert Cheaney. Director Friedkin is an Oscar winner for "The French Connection." His other credits include "The Exorcist," "To Live and Die in L.A." and "Sorcerer."

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million film, Kleiser-Walczak put up facilities adjacent to *Stargate*'s editorial department. The team was assigned a wide variety of digital chores, from purely compositional problems to complex special effects for which they hired their own live-action photography crew to shoot background plates. "We had all of our equipment right at *Stargate* to do all the rendering, digital compositing and film recording," Kleiser says. "It looked like a S.W.A.T. team!"

Due to their intensive work on the Luxor attractions (see AC Nov. '93), Kleiser-Walczak has perfected the tricky task of matching motion-control model photography to computer animation, utilizing the world's largest motion-control gantry.

"The link-up with the motion-control camera is a critical development," Kleiser says. "We can take the data driving a camera suspended from above by this immense gantry which moves over a large-scale model, and match our computer graphics precisely with that movement. Doug wanted to have people on the ground in one shot to give it more life, so it was really important to have good registration — if you're flying over people, the precision has to be perfect. The rig had certain anomalies and peculiarities: the camera thinks it's in a certain position, but it's only 'sort of' there. We had to figure out where the camera really was, rather than where it thought it was." To compensate for inconsistencies, Kleiser-Walczak developed custom software based on physical investigations of camera positions.

Kleiser is hoping to apply the ever-improving digital technology not only to pure entertainment like *Stargate* and Luxor but to weightier dramatic projects such as *500 Nations*, a six-part CBS television series produced by Pathways Productions and Kevin Costner and set to air this summer. "Santa Barbara Studios did all the animation and rendering," Kleiser notes, "and we built all the high resolution for elements of two different ancient cities, creating in the computer a database of what these cities were like back in their heyday. Then, at Santa Barbara, cameras

were flown through them. Archeologists and historians tried to piece together what it must have been like in those cities."

In the not-so-distant future, Kleiser can imagine computer graphics becoming the axis of a film, rather than merely a glittering component. "We've calculated that if Doug had done the Luxor project in regular 24fps rather than VistaVision, we would have generated about 55 minutes of animation for the project," Kleiser says. "That's better than half a movie in 14 months! So the prospect of doing a feature film with only computer graphics isn't too far away. It might be possible in the future to work within it as the medium — a computer-generated environment with characters that are either live, matted-in or generated by the computer."

However, Kleiser draws the line at any suggestion that computer-generated actors like his company's Synthespians could someday simulate specific performers of the flesh-and-blood variety. "It is not only morally wrong to profit from the art of say, a dead actor," he says, "but think of the money you would have to spend to develop a photo-realistic recreation of a specific actor. I don't think we yet understand the complexity of the muscles under the face and how they move to create a given expression. This is a medium that has exciting potential for creating new characters and situations. That's where we should be directing our energies, not toward trying to re-create something that was beautiful and terrific, but is now gone. You'd be messing with people's memories and they'd hate it."

Pacific Data Images

When a visual effects house has been serving the creative vision of others for years, it is understandable that staffers would develop the inevitable and powerful urge to tell their *own* stories.

Carl Rosendahl, the president and founder of computer animation and effects house PDI, can envision the day when his company will also be a self-sufficient production studio. "I want our own projects to ultimately be a sig-

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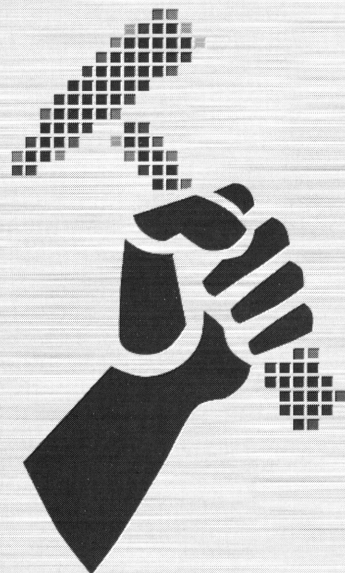
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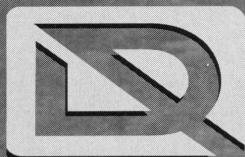
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nificant portion of what we do," he says. "We have two projects in particular right now that are fairly well-developed, and a couple of others behind that. Right now we're trying to pull together the financing."

While Rosendahl says commercial production still accounts for "about 60 percent" of the 13-year-old company's work, it is the feature-film realm that has really taken off in the last two years. Among the films PDI is providing with digital wire removal, film enhancement or three-dimensional digital compositing this year are *Natural Born Killers*, *Tall Tale*, *Angels in the Outfield*, *Double Dragon*, *Beverly Hills Cop 3*, *True Lies* and *Airheads*.

PDI executive producer John Swallow says the company's work in last year's supernatural comedy *Heart and Souls* provides a good example of the eclectic digital challenges the company faces in its feature-film assignments. The script required PDI to create effects that would allow four "ghostly" actors to interact in live-action scenes, and display different kinds of shimmering appearances and "invisibilities."

"*Heart and Souls* had a lot of 2-D image processing work, 56 shots that ranged all the way from wire removal to compositing miniatures and image manipulation," he says. "A lot of times there's a tendency in work like this to shoot a lot of sequences with blue screen or green screen, but the problem with that method is that sometimes the lighting doesn't quite match. With a lot of the work we do, we try to shoot right on the set. We have such great rotoscoping tools that we can 'roto' something out of a scene, manipulate it and digitally put it right back in the same scene. [That method] was very clean in *Heart and Souls*."

Despite the recent attention they've devoted to the big screen, PDI still pride themselves on their cutting-edge digital work for commercials. A good recent example is a spot for McCann-Erickson Hakuhodo in Japan called "Coke Comic Hero," in which a drop of Coca-Cola spills onto a comic book, springing a Coke-guzzling teen hero and his sumo-size

nemesis out of the pages. The pair wreak three-dimensional havoc in the bedroom of their real-life spectators, until the animated hero emerges victorious and returns to the comic-book pages.

"The hero and the villain are 100 percent computer-animated in a live-action environment," notes Rosendahl. "The look of it isn't typical for a computer-animated spot. We did the lighting and shading of the characters in a way that made them look like cel-animated characters with tone mattes, sort of like Roger Rabbit. The client wanted the work to be very 'comic bookish' and animated, not photo-realistic."

Rosendahl and Swallow both cite their 12-member research and development team as a crucial factor in keeping PDI ahead of the fast and furious digital trends. "I think that's fairly unique to this company, having that many people writing software every day," Swallow points out. "What we've seen, and what I don't think will change, is that we're about a year ahead of normal software. 'Morphing' is a perfect example. We were morphing images a year before it hit the market because we could see that that was where the development was headed."

Rosendahl is particularly intrigued by the future possibility of combining his company's digital abilities with the still-enigmatic interactive media. "There will be a number of years of people having some interesting successes and really dramatic failures," he says about the burgeoning interactive field. "But you need that to find out the power of the tools we have."

"To me, one of the most exciting things isn't that your Super Mario game is going to be 3-D instead of 2-D; it's the idea that now you're going to be able to communicate with a lot of other people all over the world and be able to play interactive games and be in interactive environments. The telephone is an amazing piece of interactive technology, and when you add the ability to create environments with characters in those environments, God knows what you'll be able to do! It's going to be really interesting to see."

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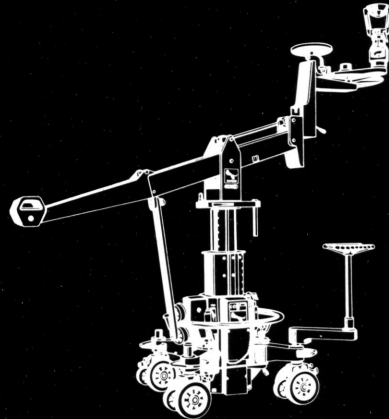
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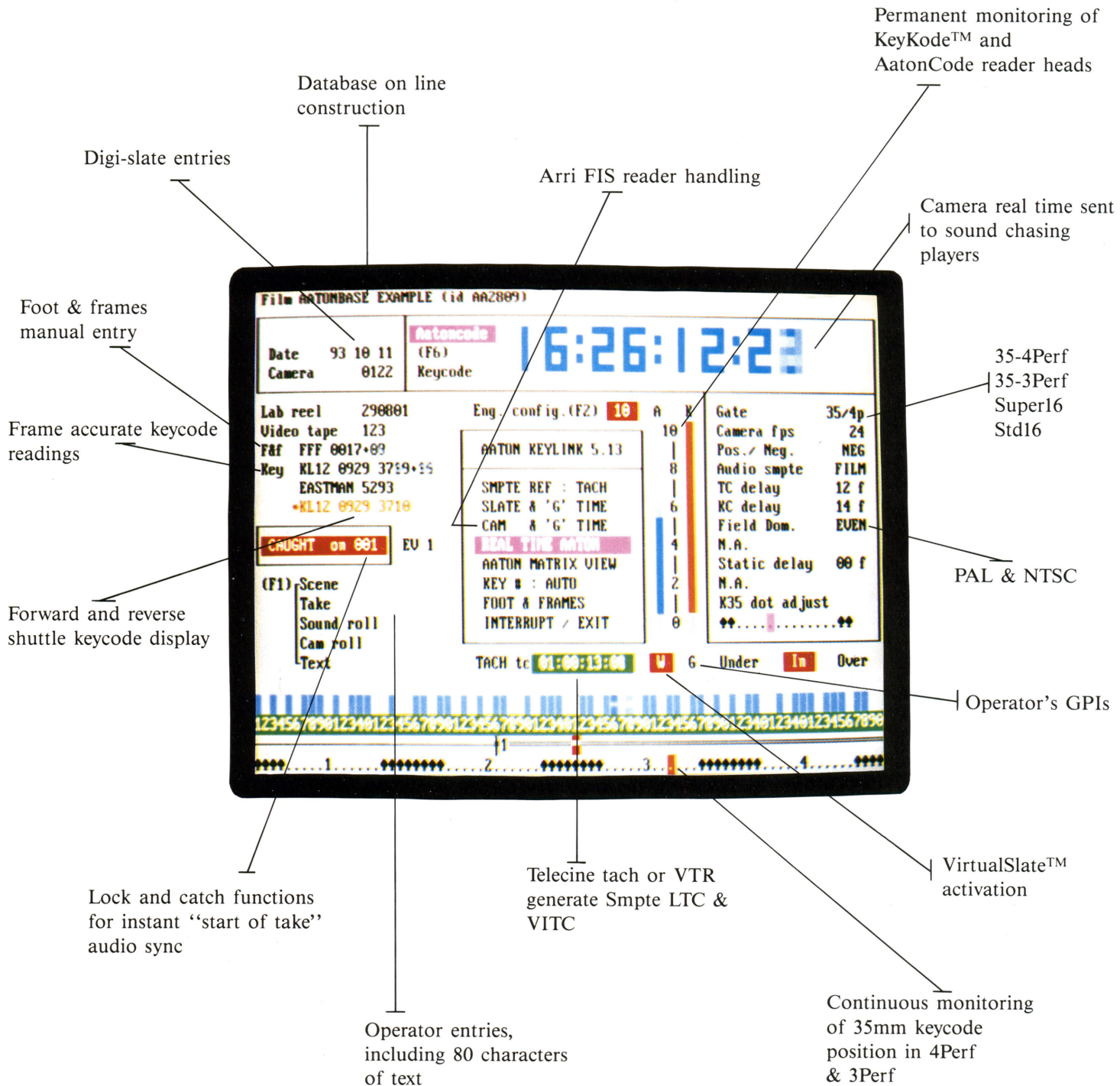
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Facing Up to AIDS in *Philadelphia*

Director Jonathan Demme and cinematographer Tak Fujimoto present an unblinking account of discrimination brought on by disease.

by Jeff Baustert

"One of the great things about filmmaking is that there's always something new that you have to contend with. That's why every day is like a new adventure," says director of photography Tak Fujimoto in the wake of his work on *Philadelphia*.

The eighth feature Fujimoto has shot for Jonathan Demme, *Philadelphia* tells the fictional story of gay lawyer Andrew Beckett (Tom Hanks) and his attempts to get compensation from a prestigious Philadelphia law firm that has fired him after learning he has contracted AIDS. Personal injury specialist Joe Miller (Denzel Washington) is the only lawyer who will agree to represent Beckett. "Miller is the kind of lawyer who advertises on TV and has clientele on the lower end of the economic spectrum," Fujimoto explains. This ironic arrangement is difficult for a once-respectable lawyer, but as Beckett's condition gets worse, it's the only hope he has.

Fujimoto began his professional relationship with Demme when he served as director of photography on the filmmaker's first feature, a low-budget Roger Corman production. "It was good to work for Corman," Fujimoto says. "Roger left you alone as long as you gave him the footage." (Corman has since had cameos in Demme's *Swing Shift* and *Silence of the Lambs*, and continues that tradition in *Philadelphia*.)

As a team, Fujimoto and Demme have built up an impressive body of work, starting with independent films in the 1970s and growing to bigger-budget productions in the '80s (including *Swing Shift*, *Married to the Mob* and *Something Wild*). When *The Silence of the Lambs*, their most recent collaboration, cleaned up at the 1991 Academy Awards, anticipation built for the controversial follow-up *Philadelphia*, the first major Hollywood



feature to address the topic of AIDS.

Fujimoto began his career at U.C. Berkeley and the London Film School, after which he went to work for Haskell Wexler, ASC and Cal Bernstein at Dove Films. "I did everything: sweep up, load mags, drive the truck, shop for props. It was a good education," he remembers. "There came a time when they said, 'Well, what do you want to do? Do you want to go into the cutting room and cut commercials, or do you want to go on being an assistant?'" Fujimoto had enjoyed assisting in the cutting room, but watching Wexler at work inspired him to go out into the world as an assistant.

After leaving Dove, he

worked on director Terence Malick's *Badlands*. He has since teamed with a wide spectrum of directors, including John Hughes (*Ferris Bueller's Day Off*), Howard Deutch (*Pretty in Pink*), Daniel Petrie (*Cocoon: The Return*) and Irwin Winkler (*Night and the City*).

Fujimoto's wide range of photographic skills allowed him to fuse the dramatic elements gathered by Demme. The cinematographer's primary concern was augmenting the central character's progressively deteriorating physical appearance as the AIDS virus takes its toll. In portraying Beckett, Hanks undertook a rigid diet and exercise plan to change his physical appearance during the shooting, and the bold photographic styles employed by Fujimoto had to reinforce rather than hamper the actor's performance. In portraying Beckett's physical and emotional state, Fujimoto took some photographic gambles, alternating a documentary style with dramatic "Hollywood" lighting and coverage.

Philadelphia producer Ed Saxon, a veteran of five Demme features, explains Fujimoto's value to a director: "Tak has a tremendous sensitivity to human motivations and emotions. That's what motivates a lot of his camerawork in terms of both lighting and movement." This ability to understand the material and give it visual expression is exemplified in his treatment of a sequence that takes place late at night in Beckett's loft, where the two main charac-

Produced by Edmund Saxon
and Jonathan Demme
Directed by Jonathan Demme
Director of photography, Tak Fujimoto

ters are planning their strategy for the trial. "Instead of talking about the testimony," Fujimoto explains, "Beckett starts talking about music and opera and becomes involved in describing an aria by Maria Callas. It took a little while to find some sort of visual way of presenting this involvement, [and conveying] how Miller is stunned by Beckett's deep emotional attachment to this piece of music."

Fujimoto recalls that he and Demme discussed the scene early in preproduction and decided "to take it out of the realistic mode and do something much more visually heightening," using surreal lighting and hard-hitting camera angles to portray Beckett's emotions in his crumbling world. "Everybody feels so down and depressed by seeing his physical appearance going downhill," says Fujimoto, "and then all of a sudden, out of the blue he starts talking about opera, and it lifts him out of this depressed state."

A fireplace burns in the background as the scene begins. "As Beckett started describing what was happening in the opera, I took the lights down low and started emphasizing the flickering of the fireplace lights, so that all you had in the scene was a light flickering on Tom and a light flickering on Denzel," Fujimoto describes. Incorporating high angles and Dutch tilts, the scene plays as a painful example of how passionately Beckett has lived life, heightening the tragedy of his illness.

Photos by Ken Regan, courtesy of TriStar Pictures, Inc.



Visual elements such as these were suggested throughout the initial drafts of the story.

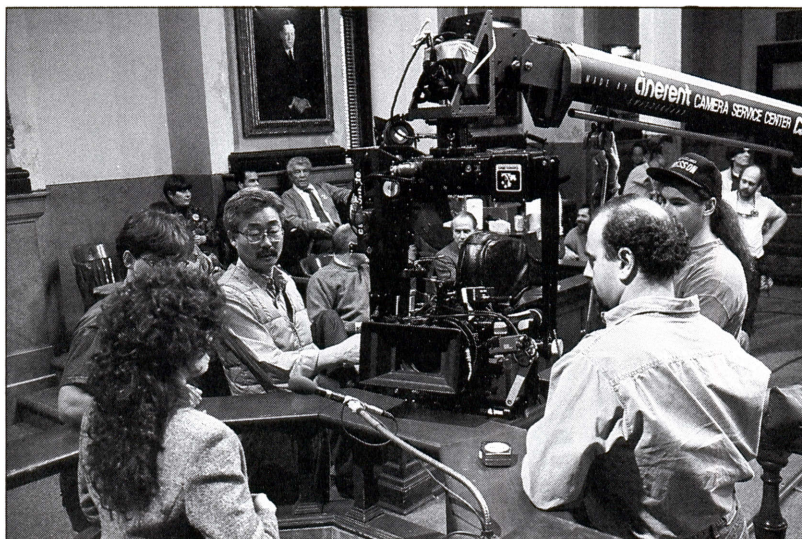
"When Jonathan has something going he usually sends me a first draft," explains Fujimoto. "The script went through quite a few visual permutations. Since it is a courtroom drama and a lot of courtroom dramas are pretty standard visually, they tried to put more visual style into the script."

In later drafts of the screenplay, however, "the script was cut back to more of a standard drama to highlight the well-written characters and the actors," at which point the story-enhancing visuals seemed to get in the way. "Essentially we shot a much more straightforward type of movie and let the script and the characters take the movie," Fujimoto says. "[Jonathan] just had confidence enough in the material to do away with those things."

Reflecting the script changes, Fujimoto's camerawork went in a more realistic direction. His use of documentary-style camera movement and coverage allows the film to flow more naturally, bringing the audience into close contact with the characters' intimate lives. In a scene where Miller and his wife, who has recently had a baby, discuss prejudices against gays and victims of AIDS, this style serves to make the audience feel as

Opposite page: Charles Wheeler (Jason Robards), the powerful head of a prestigious Philadelphia law firm, places his faith in Andrew Beckett (Tom Hanks) by naming him a senior associate. This page, above: In lighting Denzel Washington and the rest of the cast, Fujimoto aimed to flatter the actors without drawing undue attention to them. Left: Fujimoto's primary lighting concern was to subtly convey Beckett's changing physical appearance throughout the different stages of his illness.

Top: Fujimoto mans the camera inside a courtroom in Philadelphia City Hall, where all of the trial scenes were shot. The cinematographer and his crew went to great lengths to rig the century-old building. **Bottom:** Demme (right) provides some last-minute instructions to actors portraying the jury. Fujimoto says that Demme remains open-minded to all creative input during filming, thus making solid preproduction necessary to allow for the flexibility.



if they are intruding on a private conversation. When Beckett tells his extended family that he is going to trial and warns them of the graphic details that will be brought up, the camera relates the warmth shared by the assembled family members.

Also used in numerous scenes was a technique memorably employed in *Silence of the Lambs*. During an intense conversation in that film, Hannibal Lecter (Anthony Hopkins) and Special Agent Clarice Starling (Jodie Foster) each speak directly to the camera, making Lecter seem more threatening and Starling more vulnerable. In *Philadelphia*, the technique highlights Beckett's deterioration more effectively than standard coverage conventions could.

Fujimoto took a more classical approach to coverage and lighting in the beginning of the film, when Andrew Beckett is named a senior associate at the law firm of Wyatt, Wheeler, Heliman, Tetlow & Brown. Conventional lighting and coverage showcase the opulence of the law firm, while later in the film the look is contrasted with the starker atmosphere of hospitals and courtrooms.

Demme and Fujimoto also took advantage of the atmosphere in a law library that serves as the site of a turning point in the story. After initially turning Beckett down in his request for representation, Miller spots Beckett weeks later in the library. The scale of the



library makes Beckett seem overwhelmed by his surroundings; this visual ambience is augmented by the use of both low, wide angles and high crane shots.

To get the impressive overhead shot that concludes the scene, Fujimoto employed the Swissjib and Matthews Cam-Remote, a configuration exploited throughout the production by camera operator Tony Janelli, who had worked with Fujimoto on *Silence of the Lambs* and *Something Wild*, and first assistant cameraman Pat Capone. "Tony's very good with the wheels," Fujimoto notes. Capone, in his first feature collaboration with Fujimoto, also received high marks for his work. "We used [the Cam Remote and Swissjib] a lot," Fujimoto says. "There was a

lot of focusing without taking the tape out, and it didn't faze Pat at all."

Joanne Woodward and Demme alumni Jason Robards and Mary Steenburgen (both of whom appeared in *Melvin and Howard*) essay important characters in *Philadelphia*, but the director downplayed their star status to ensure that their roles never distracted from the story. Fujimoto's lighting manages to flatter the actors without drawing undue attention to them. But the cinematographer's paramount lighting concern was in conveying the look of Beckett's deteriorating body. "In the beginning [of the film] I try to give him a full

light so that he looks healthy and robust," Fujimoto explains. "Towards the end I had to get the lights up high to make him look as tired, haggard and ill as I could."

Nearly 30 minutes of the film take place in the courtroom where Beckett's case is tried. Rather than shooting on a stage, the production moved into a courtroom in Philadelphia City Hall, an elegant old building built in the 1890s and replete with classic architectural touches such as plaster filigree.

Grip Billy Miller and Fujimoto visited the courtroom three months prior to the shoot and realized it would require extensive rigging. "Obviously we wanted to have all the lights up above so we could shoot almost 360 degrees or

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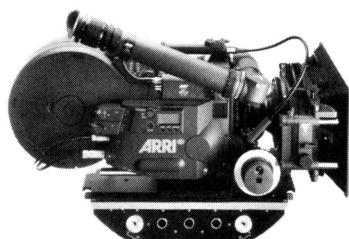
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For a pivotal scene in which Miller spots Beckett researching for his own defense in a public library, Demme and Fujimoto used both low, wide angles and high crane shots to portray Beckett as seemingly overwhelmed by his surroundings.



do wide shots," Fujimoto recalls. "The windows they had there weren't very well placed, photographically speaking. Eventually we had to put all the lights up." Conventional rigging would call for lights on scaffolding or Condors outside the windows, with some units rigged off balconies or attached to the ceiling. However, the crew couldn't touch the walls or ceiling for fear of damaging the filigree, so rigging grip Matty Miller devised a grid that was rigged through the ceiling and attached to the building's structural beams above. Installing it entailed crawling along the beams in a two-foot-wide crawl space, cutting holes in the ceiling and hanging a truss. "There was a hundred years of dirt up there," Fujimoto recalls. "Marty came out looking like a coal miner." Rigging gaffer Kenny Connors then hung several 10Ks, Seniors and nine-lights.

Fujimoto speaks very highly of his *Philadelphia* crew. "I'm not a hands-on kind of guy," he admits. Gaffer Russ Engels, who also worked on *Silence of the Lambs*, and key grip Jimmy Finnerty, Jr., who was making his debut with Fujimoto, received particularly

high praise; the duo proved their worth in managing the meager winter daylight hours. With usable daylight lasting only from about 9 a.m. to 3:30 p.m., "filming in the East during the winter is a chore," Fujimoto says. "The crew has to scramble to get those shots in."

Just as Fujimoto's crew was a combination of previous collaborators and newcomers, the *Philadelphia* family included many alumni from the Demme films *Silence of the Lambs*, *Something Wild* and *Married to the Mob*: executive producers Kenneth Utt, Gary Goetzman and Ron Bozeman, producer Edward Saxon, production designer Kristi Zea, editor Craig McKay and costume designer Colleen Atwood. Producer Saxon feels that the close-knit personnel contributed to Tri-Star's enthusiasm for the project, and Fujimoto concurs. "They love it that we're a team that has continuity," Fujimoto remarks. "The one thing that you don't want in filmmaking is a lot of nasty surprises. There are fewer of them on a personality level when you work with people who are consistent collaborators."

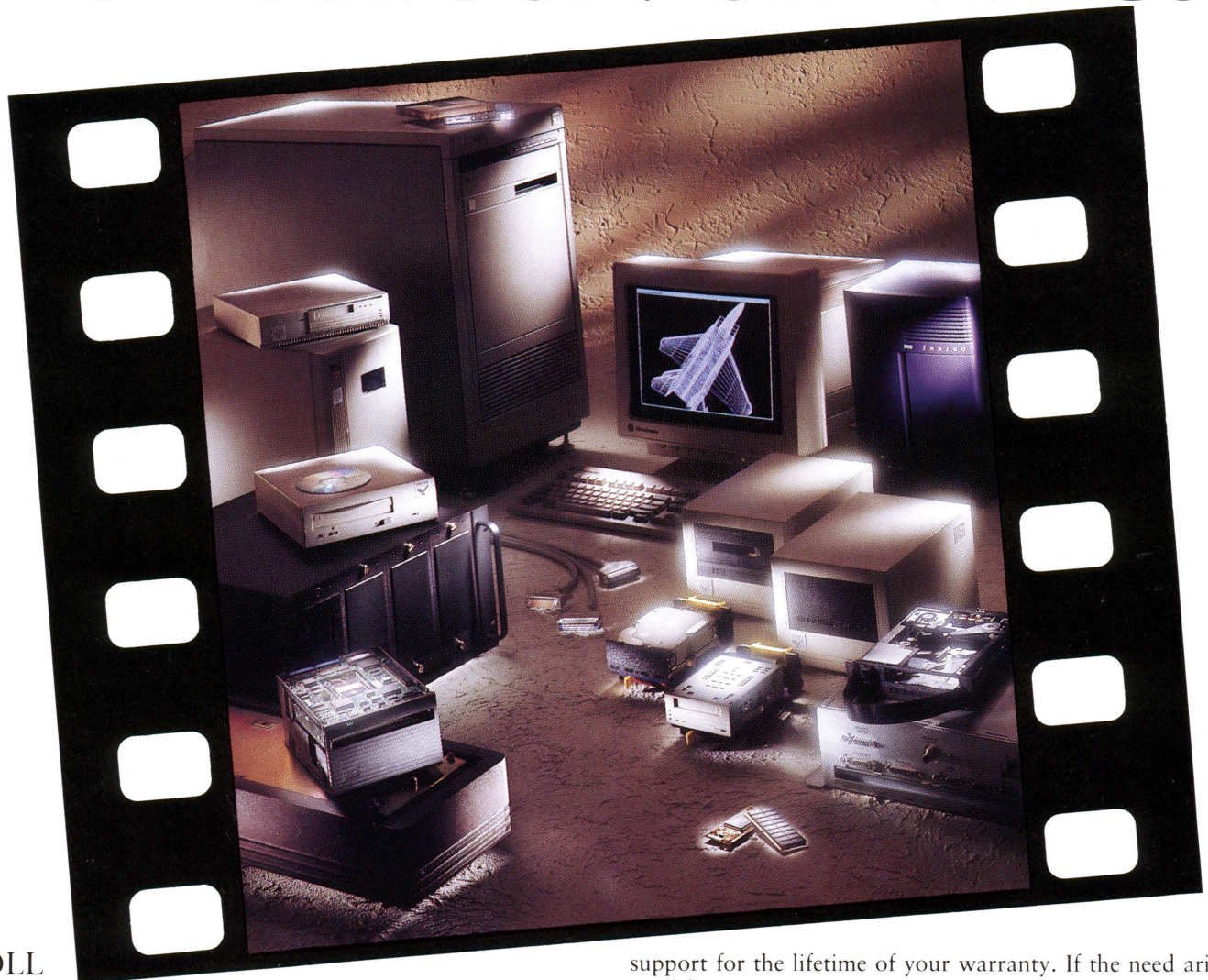
Fujimoto shot *Philadelphia* with Panaflex cameras, relying

heavily on the Panavision 5:1 zoom. He stresses simplicity in his use of filters, and on this film he used none. In choosing film stocks, Fujimoto took into consideration the fact that opticals and wipes would be added in later. "[For that reason,] I didn't use so much of the 96 film stock. I used a lot of 93, which is a better-grained film for reproduction." The exteriors were shot on 5248, with 5296 used only for nights.

A personal highlight of the shoot for Fujimoto was working with Garrett Brown, the inventor of the Steadicam. "We asked him to come and do Steadicam for us," he recalls. "There were some complicated shots, so he came on some of the location scouts with us to find out what we had in mind and to see if he could do it. I think we challenged him, so he came on board."

Throughout production, Fujimoto has to keep in mind that Demme is open-minded to most everything from start to finish; preparation time is crucial to accommodate that flexibility. Drastic changes are often made after rehearsal or even while blocking the scene on location, and supporting

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Demme's style with the technical details of lighting and camera placement takes a lot of planning by him and his crew. "What people don't always know about is the depth of preparation that Tak takes," Saxon explains. "As he goes in, Tak has thought out all of the alternatives."

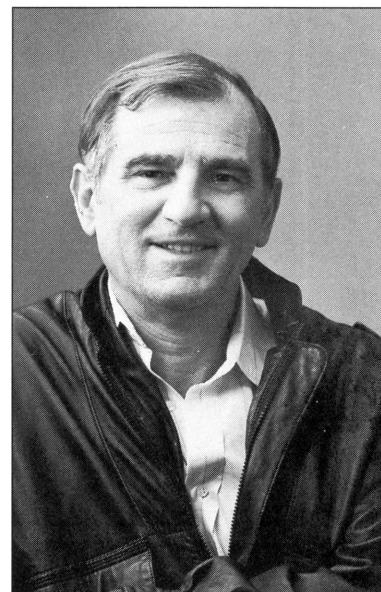
These discussion periods are also where most of a film really comes together for Fujimoto, since they present an opportunity to talk to Demme and elicit general creative ideas. "Jonathan is very open to hearing what everyone has to say," he says. "He's not a technical director. He lets the people who work for him deal with that. His instincts are very good because he knows what the core of the scene is, and [he makes sure] that the points that need to be emphasized get emphasized. He's not attached to the material. Some directors are attached to scenes, but Jonathan's good at hacking away what's not important. We'll sit through a screening, the lights will come up and he'll say, 'I guess we didn't need that scene,' and then go into the editing room, cut out the scene and remix the same day."

The *Philadelphia* locations required a lot of work to serve Demme's directing style. "A lot of times he's an intuitive kind of director," Fujimoto says. "He'll have an idea of how to do the next day's scene, the one shot that he wants to do. We may not have been prepared to do it, but we're going to have to do it somehow."

Demme's personal style of staying away from technical details also makes each department head more important. "Jonathan gives all of his collaborators a lot of freedom," Saxon says. "He lets everybody be responsible for their work and then kind of edits, if you will. So that means that it's fun to collaborate with him because you get a chance to do your thing."

Summing up his work with Demme on this latest project, Fujimoto says, "Most of the film is pretty naturalistic, yet there are those Demme touches throughout. There are lighting changes, and some unusual camera movements. They're part and parcel of his film vocabulary. There'll be some surprises for the audience."

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Capturing Geronimo On Location

Lloyd Ahern employs old-fashioned aesthetic to shoot saga of the ultimate survivor.

by Chris Pizzello

Lloyd Ahern saw the cinematic chance of his lifetime spread out before him as he read the script for *Geronimo: An American Legend*. The sprawling saga of the fabled Apache leader's longtime cat-and-mouse relationship with the U.S. government was to be shot in breathtaking Moab, Utah and directed by crackerjack action stylist Walter Hill. The ambitious story would demand equally ambitious images.

"I knew it was going to be a huge picture, an epic picture," the cinematographer recalls about his first impressions of the script. "Photographically, I thought it was going to be an incredible opportunity. Walter's really a cinematographer's best friend, because he's such a visual director."

Ahern had already supported Hill's lean and mean narrative style when he replaced Hill's usual director of photography, Matthew Leonetti, ASC (who was busy with another commitment) on 1992's intense actioner *Trespass*. Ahern happily discovered during the experience that his own visual sensibilities gelled perfectly with Hill's, and the two decided to hook up again for *Geronimo*.

"On *Trespass*, I saw that Walter is a very hands-on director," he offers. "He treats all of the elements of a movie equally. Preparation is a movie, shooting the movie is a movie, and postproduction is a movie. That's really why his films are so intense. How he re-tells and elaborates upon a story after it's shot is fabulous. When I finally saw *Trespass*, it was like sitting on nails!"

The opportunity for grand-scale, big-budget shooting on a project like *Geronimo* continues a natural progression for Ahern, who grew up around sets

as the son of late cinematographer Lloyd Ahern, Sr., ASC. Ahern can still recall many childhood visits with his family to the 20th Century Fox lot, where Ahern Sr. was under contract.

"I remember a time with Bob Wagner, who was then a new

came friends on the set of the classic television Western *Gunsmoke*, for which Ahern served as second assistant cameraman while Hill passed out call sheets.

Ahern got his first break when director of photography Vincent Martinelli, ASC decided to



Photos by Sam Emerson and Merrick Morton, courtesy of Columbia Pictures, Inc.

This page: Cinematographer Ahern (right) and director Hill agreed that Moab's tough terrain was perfectly suited to the film's gritty visual style. **Opposite:** The ever-elusive *Geronimo* (Wes Studi) uses a watery route to escape U.S. troops yet again. Ahern and Hill were vigilant in photographing characters only in crosslight and backlight.

actor starring in *Prince Valiant*," Ahern recalls. "Wagner told my father, 'He should play me as a kid,' so they put me in the movie as the young Prince Valiant! My whole life was on movie sets and being around the business. I always knew I was going to be in it."

The beneficiary of numerous impromptu lessons on camera technique from his father in the family garage ("More of a lighting studio than a garage," he laughs), Ahern landed his first job in the loading room at CBS Studio Center in 1963. From there he worked his way up the crew ladder in traditional fashion, serving as a second assistant, first assistant and then camera operator on numerous television programs and movies. Ahern and Hill first be-

trade off shooting chores with Ahern on a week-to-week basis for the TV program *Simon and Simon*. Ahern went on to photograph the television pilot *On the Edge* and the series *Eddie Dodd*, as well as a host of movies-of-the-week, before getting a shot on *Trespass* with Hill, for whom he'd served as an operator on 1984's *Streets of Fire*.

While Ahern says Hill likes to take a loose, freewheeling approach toward scripts (frequently writing new dialogue the night before shooting a scene), he took a stricter attitude toward

Produced by Walter Hill
and Neil Canton
Directed by Walter Hill
Director of photography,
Lloyd Ahern



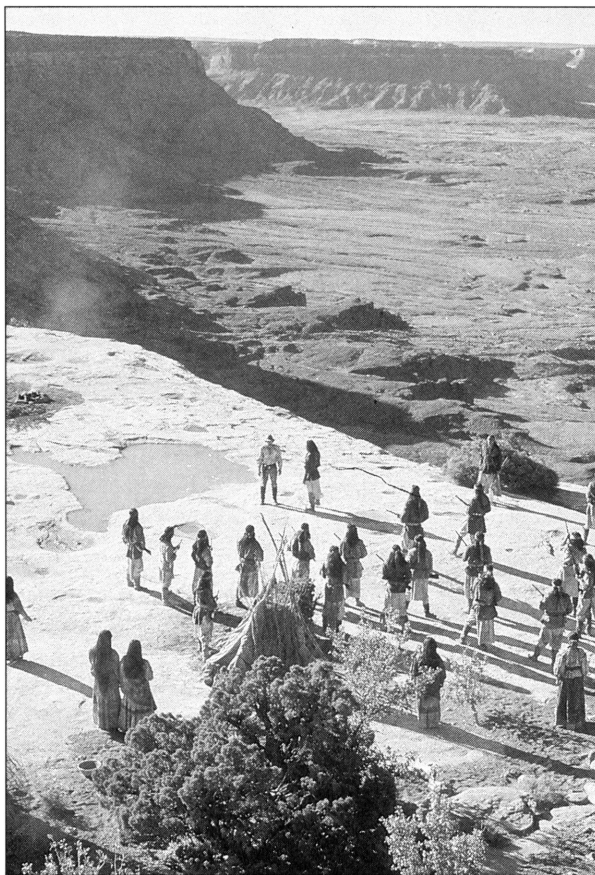
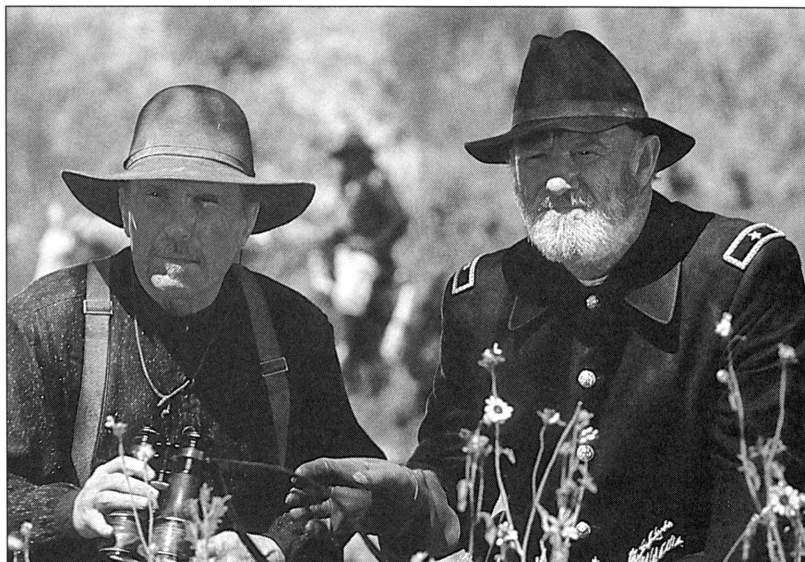
Top: Al Seiber (Robert Duvall) and Gen. George Crook (Gene Hackman) stay on the lookout for their Apache nemesis. Despite the contrast problems presented by the characters' hats, Ahern was careful to use a "less is more" approach in lighting faces. Bottom: The warring factions face off against the stunning natural backdrop of Moab.

Geronimo's locations, a crucial aspect of any Western. "Walter was really intent on the old-fashioned Western look," Ahern says. "He didn't want to see anyplace that was too green or too pretty. He wanted it tough, and Moab, Utah was the place. He wanted the place to reflect the story; while Moab is breathtakingly gorgeous, it's also really tough-looking, and a tough place to shoot."

Ahern and Hill thus agreed in preproduction discussions that the look of the film would have to be appropriately weathered and old-fashioned. "We looked at a lot of the old John Ford westerns, as well as old Western books," Ahern relates. "Those old Westerns, because of the different film and processing, had a certain look. You see old movies and they almost look *better* than new movies in a way, because they take you back. . . . I wanted to get that sort of feeling in this picture because with this technology today, the film is so good and the lenses are so sharp that it's *too* clean, *too* pretty. It's anti-septic."

Hill seconds the sentiment. "[Lloyd] understands that you can sometimes make things too perfect, and the result lacks life," the director asserts. "He understands that he's there to serve the drama, that the project isn't just about photography."

Ahern fulfilled his usual *modus operandi* upon his first arrival in southeastern Utah, roaming the terrain and shooting thousands of still photos. "What I found out



right away," he recalls, "was that the light in Moab is very, very white. I called back to L.A. to two assistant cameramen I have, Greg Smith and Mark LaBonge, and told them, 'You guys have got to bring something out here that isn't normal to warm up this light!' I didn't want to have any correction done in the lab."

In adherence to this practical philosophy, Ahern had his assistants assemble a wide variety of warm-colored filters. Meanwhile, he continued snapping stills, using a color lab in Moab for his experiments. "I would shoot a generic still of a mountain in the worst dull white light I could find," Ahern explains. "I told the person in the lab to go crazy on the thing — warm it up, make it as beautiful as possible, make it look old-fashioned, push it. I told her to push all of the wrong buttons, and I didn't care how many failures she gave me as long as I got 25 different prints of this still. I was searching for a warm, old-fashioned look."

Smith and LaBonge were making their own tests, and had come across a possible solution to Ahern's stylistic quest: a Tiffen Tobacco #1 filter, which significantly warmed up colors and lent a burnished tone to the images. "Even though I despise smoking and tobacco," Ahern smiles, "the idea of tobacco is kind of old-fashioned. The fact that it was even named 'tobacco' made me like it before I had even seen it."

Back in Los Angeles, Ahern showed the tests to lab technician John Bickford and Hill's longtime editor Freeman Davies. The tobacco filter's look was chosen unanimously. "I knew when I looked through the camera in Moab that it was the right one," Ahern says.

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Ahern and Hill employed an unconventional but consistent long lens strategy by positioning the camera far back from the actors, placing the characters inside their geography.



the sense that it doesn't look high-tech," Ahern elaborates. "It doesn't look exactly like an old picture because that look was achieved with different development, different film stock, etc. But it does have an *older* feel to it. A lot of times when the air was really crisp, I would also put on a ProMist filter to knock the edge off.

"We used the tobacco filter in every shot in the film, interior and exterior. At the very beginning, everyone said, 'Gee, that's a *nice* effect.' They weren't quite sure they were crazy about it. But I knew that I didn't want to start figuring out when to use it and when not to, so that the film looks one way when Geronimo's with the army, another way when he's not. Soon, everybody got used to it and liked it. But the most important thing was, *I* liked it and I knew in the long run that it was going to make this film distinctive."

Ahern and the entire production faced the logistics of shooting a movie in Moab, a town well-acustomed to invasions from Hollywood authenticity seekers. In early 1993 (when *Geronimo* was in

preproduction), Utah's branch of the Bureau of Land Management was under persistent pressure from environmental groups concerning movie companies' alleged mistreatment of Moab.

"It's a town that's used to movie companies but not in awe of them," Ahern notes. "The BLM is constantly being watched by environmental groups because movie companies have come in there in the past and abused their privileges. So the BLM was more vigilant than normal."

While bad weather is traditionally thought of as a calamity for a film so dependent on locations, Ahern says that a stormy spell in Moab ironically turned out to be a blessing. "In February, March and April during preproduction, there were incredible thunderstorm clouds and great-looking, dramatic John Ford mountains silhouetted against them," he recalls. "I said to myself, 'It's too bad we didn't do this picture now.'"

"It turned out that May and June, when we were shooting, had the wettest, weirdest weather Moab has ever had! We had all our

clouds, all our rain, everything we could have asked for. When the sky was clear with no turbulence, it was dull. Sometimes it wouldn't match, but I didn't really care — I knew in the end that they'd find a way to make it all match. So we got a lot of dramatic weather, which helps a lot in the film."

Focusing on the final months of the U.S. Army's Geronimo campaign of 1885-1886, *Geronimo: An American Legend* tells the story of the events leading to the surrender of the Apache leader (played by Wes Studi). It chronicles Geronimo's steadfast determination to battle the U.S. government's advance westward and the relocation of the Apache from their homeland.

While there are a few historical inaccuracies in the film, it largely avoids simplistic 'black and white' characterizations in favor of the complicated, often ugly truth. "The real story's so good, why not tell the truth?" Ahern points out. "I was fascinated by Geronimo because the guy was an unbelievable survivor. He could have been hung, was almost killed in a war,

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could have been killed by his own people, but he wasn't. He survived all of this against unbelievable odds and died as an old man."

Kinetic is a word often used to describe Hill's directorial style. Ahern affirms that Hill likes a lot of camera coverage, and is

"You couldn't tell this story without the landscape being one of the main characters."

constantly considering how all the footage will fuse together in the editing room for maximum impact. "Walter is the king of multiple cameras," Ahern states. "We were always shooting a master and a close-up at the same time. Good actors like Gene Hackman and Robert Duvall (who portray adversaries of Geronimo) like to work fast, so they're in favor of the idea that you're covering them and not spending a lot of time on different setups. We shot with four cameras and four operators all the time. We had two camera trucks, so the second unit could go off by itself if necessary and shoot the big, wide shots, or stay and shoot along with us." Ahern adds that the enormity of the production made an industrious crew a necessity, and he lauds the efforts of second-unit director of photography Mike O'Shea, gaffer Jack Schlosser and key grip Bo Miller.

Hill admits that he's always looking around a prospective location for good spots to sneak in another camera. "The important thing is to avoid putting two cameras side by side," he says. "Why end up with the same thing on two cameras? But at the same time, if you're working at right angles, you have to be very careful that you're not sacrificing the lighting. You may have one good shot, but another shot could have a good cutting angle but the wrong light."

Ahern says that Hill's fondness for the compressed look of long lenses provided not only aesthetic beauty but editorial

economy. "Walter likes to be way back with a long lens, but still be able to see everything," Ahern explains. "I would say to him, 'You mean a tight wide shot?' and he would say, 'Exactly!' We would show as much of the beautiful vistas as possible with an extremely long lens. So when you look at a typical scene in this movie, you know where you are because there's a beautiful look with the compression of the long lenses. Then, he'll jam you dramatically with tight close-ups. We would actually shoot a lot of beginnings of scenes in the masters, which is what we looked for in the John Ford westerns. Ford shot a lot in Moab, so it was definitely in that tradition."

Hill says he and Ahern made a commitment to use the long lenses in an unusual but dramatically sensible fashion. "When most people shoot long lenses, they tend to be close to the actors," he explains. "But I was very concerned that this movie be about the characters and the landscape they're in. I figured that the compression would put the characters inside their geography and in context. You couldn't tell this story without the landscape being one of the main characters. When Geronimo says, 'Why isn't there enough room for us?' and the audience sees the incredibly vast, empty landscapes, it becomes a much more poignant question."

Of course, this shooting strategy meant that the filmmakers weren't exactly in intimate contact with the performers. "We were way the hell back," Hill recalls with a laugh. "I had to direct some of the movie with a pair of binoculars and a walkie-talkie. It's hard to imagine how they made a movie like this before these walkie-talkies were made!"

The arduous, somewhat frenzied production (scenes for the December release were still being photographed in October) required a convenient, integrated equipment package, and Ahern stuck to Panavision Gold II cameras with Panavision lenses. "Everything fits and everything works," he states simply. "A production is only as fast as its slowest department, and

the last thing you want is for your department to be slow. I needed the best possible equipment that could be interchangeable, do anything and be placed anywhere — down on the ground, up on a parallel arm on a crane, or even inside a hole."

Heedless of prime-lens purists, he found the Panavision 50-500mm (10:1) zoom lens particularly versatile on Moab's unforgiving terrain. "I used every possible lens on this movie, but Walter was always telling me, 'Tighter!'" Ahern says. "With the zoom, I could go quickly from 50 to 500. Also, there's no such thing as a 312mm prime lens, but there is on a zoom. The contour of the earth would be such that you would say, 'If we go back a half-mile and shoot with a 400mm, it's going to look better.' The shape of the foreground sometimes lost something in doing that; so you'd take a big trek backwards and find out it wasn't as good-looking as the first vantage point. If you have to change lenses, you don't have that many options. When you're running up and down those hills in Moab trying to find a perfect shot, you want to be able to dial around and find the perfect perspective."

"A lot of cinematographers have a certain snobbery about zoom lenses," he adds. "The 10:1 lenses aren't that sharp in anamorphic, but it was all right because I didn't use a ProMist on those. If I was trying to shoot a really crisp, beautiful picture, I wouldn't use that lens. But for *Geronimo*, it was a gift from heaven."

Ahern decided to exercise a "less is more" approach toward exterior lighting, using artificial light to merely augment the natural illumination in Moab. Hill, for his own part, was vigilant in ensuring that scenes weren't shot in harsh frontlight.

"I think maybe the most significant visual aspect was staging so that we were constantly shooting in crosslight and backlight," the director remarks. "This occasionally tried the patience of the actors because when they thought they were oriented in a scene, I would turn them all

around! But it really did help the look of the film. There's no cinematographer in the world who can take on direct sun and frontlight and make it look pretty."

Ahern found that the 5293 film provided the necessary warmer look he desired, as well as having the latitude to handle the various sun-drenched, contrasty locations in *Geronimo*.

"Nearly every character in the movie wore a hat, and I was always afraid that the contrast between a character's face and the hot background would be too much," he says. "Often a character's face would be at 5.6, while the background would be at f-22. If you lit the character with a front light in the traditional way, it would look 'filmy,' with no balls to it at all. So right away, I started using less and less light; I would just use backlights and crosslights on people to 'pop' them. The 5293 would dig into the faces under the hats and handle the hot background really well."

In a twist of fate consistent with his view of *Geronimo* as a stylistic descendant of the classic Westerns, Ahern found himself employing lighting tools from the film productions of yesteryear when newer, more streamlined tools failed in Moab's harsh environment. "We didn't use any HMI 12Ks," Ahern says. "We used arcs, and that's important to anybody who's going to shoot in that kind of country. First of all, nothing worked. There was *always* a dust problem. By the time we arrived in the morning, every truck was completely filthy. We couldn't take 12K HMIs out in the field because the bulbs would break. There was so much dirt and dust that we had one crew member whose sole job was to constantly clean the lights, take them apart and fix them. Yet they still broke down, so we just stopped using them."

"We made the whole movie with arcs and nine-lights," he maintains. "We would put the arcs on jeeps, have the camera on a crane, and hit people from behind or just backlight them. I would never front-light them, because I didn't want this film to look 'lit.'"

Ahern used the fast 5296

for the interiors, since the combination of the tobacco filter and an 85 filter reduced his working ASA to 160. "We would have to build the light up inside to 5.6 so that the light outside our windows wouldn't blow out," he explains. "We had horses outside and action that I wanted to keep from going white or hot. We wanted to keep it as moody as possible, which is very tricky when you're using that much light."

Smoke was used as an atmospheric enhancer in only one scene, a gunfight set in a Mexican cantina. "I'm really bored with smoke," Ahern admits. "I think it's overused. I may fall madly in love with it again when everyone else hates it, but right now it's such a cliché. On most of the gunfight scenes, we'd use Fuller's earth and fire off 10 or 15 shots. It got a little hectic, but it looked and matched the best."

Geronimo is the third Western-themed film Hill has taken on in his career, along with *The Long Riders* (1980) and *Extreme Prejudice* (1987). "I think I just like the clear-cut conflicts of Westerns," muses the director, who admits that the John Ford classics claim a permanent and special place in his memory. "They're usually mostly about moral and ethical behavior, and they ask questions about what civilization is all about. . . I can't really explain it, though. I liked them when I was a kid and I still like them!"

The pragmatic Ahern manifests his lifetime of experience inside the Hollywood myth-making machine when asked about the studios' recent rabid desire to hop onto the Western bandwagon. "It's all about success," he says matter-of-factly. "[The trend] is all driven by the box office — look at *Dances with Wolves* and *Unforgiven*. Luckily, I was raised on Westerns. I worked as an assistant cameraman on *Guns Smoke* and *Rawhide*, so none of this is new to me."

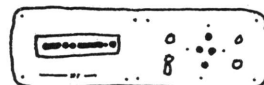
Nor does the trend bother the cinematographer. "It's fun to make a Western," he offers with a boyish grin. "It's certainly better than sitting on a soundstage." ❄

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Six Degrees of Separation: Bringing Chaos Under Control

Director Fred Schepisi and cinematographer Ian Baker
commit John Guare's play to film.

by Brooke Comer

When John Guare's *Six Degrees of Separation* originally opened in New York, the play was performed on a sparsely decorated stage, and the opulent lifestyle of main characters Flann and Ouisa Kittredge was evoked through the actors' speech and gestures. As Paul, a charming young black man, insinuates himself into this lifestyle by pretending to be a college friend of the Kittredge children, Guare has the grist for his cultural counterpoint. Paul cons the Kittredges and their Manhattan social set with an elegance commensurate to the artifice the Kittredge crowd themselves employ. Pretense becomes an art form symbolized by a two-sided Kandinsky painting, the prized possession of art dealer Flann Kittredge and one of the few props on the bare stage.

Directed by Fred Schepisi, photographed by Ian Baker and starring Will Smith, Donald Sutherland and Stockard Channing (who originated her role on Broadway), MGM's film version lets *Six Degrees* expand beyond the Kittredges' Fifth Avenue penthouse. New York is more than a vivid backdrop; the city becomes a central character.

The Kandinsky painting seen in the film is not a genuine work by the artist, and was in fact designed by Guare — with the permission of the Guggenheim Museum — to match two distinct phases in Kandinsky's career. The other paintings in the Kittredge collection, including a Degas, are genuine. But neither these accoutrements nor the wealth of New York scenery de-

tracts from the story's original theme. "This film is about emotion," says director of photography Baker. "It gave me a chance to contrast emotional textures, which is a wonderful opportunity for a cinematographer."

Baker, whose credits include *Roxanne*, *The Russia House*, and *Mr. Baseball*, works often — but not always — with Schepisi. Recalling his entry into the film world, the Melbourne, Australia native says that he was complet-

was intrigued for two reasons: because I noticed cinematic quality for the first time in these foreign films, and also because I was being exposed to parts of the world that I hadn't ever seen before." He wasn't impressed by any particular filmmaker, however. "I don't have favorite people. But I marveled at the cinematography in many European films, the combination of landscape and photography that kept you riveted to the big screen in front of you."

Television offered the Australian film industry a new frontier, and Baker took advantage of the opportunity to expand his work. He met Schepisi, who had his own production company, and the chemistry between the two sparked success. "We were both energetic and willing to experiment, and we drove one another individually and collectively," says Baker. "Every project we did was a step beyond the norm."

Even though Baker had limited access to technology, he remembers those days fondly. "There was no high-tech equipment," he remembers. "We used bits and pieces." He quickly learned to get the maximum performance from the cameras on hand, mostly Arris and a French-made Camiflex.

But if technology was lacking, invention and ingenuity were not. "A dolly shot was something you did handheld or



Photos by Myles Aronowitz, courtesy of Metro-Goldwyn Mayer, Inc.

ing art school and had no definite career plans when he "lucked out and got a job in a film company." TV had just been introduced in 1950s Australia, and not everyone had a set, so movies were the main form of entertainment — "mostly American family films, like *My Fair Lady*." But cinema didn't pique Baker's interest as an art form until he began attending international film festivals. "I

Produced by Fred Schepisi
Directed by Fred Schepisi
Director of photography, Ian Baker

while someone pushed you around in a wheelchair," Baker recalls. Lighting was old-fashioned, heavy and not very powerful, "but because of the limitations of my background, I learned to improvise, to work small. Today, even though I have access to the latest high-tech gear, it's not always the solution to some of the challenges I face. I've learned to look beyond the easy answers."

Six Degrees presented Baker with plenty of challenges, and often there *were* no easy answers. When he works with Schepisi there are no shot lists or storyboards, "just a lot of talking." The cinematographer prepped by studying the play as a text and as a performance, so that by preproduction time, he was ready to throw his two cents in. "By then I had started to formulate a feeling for the emotion of the film and for the textures involved in conveying that emotion," Baker says. "In many ways it was like painting a picture: you know what you're going to aim for in terms of tone, but you have to figure out how to get it just right."

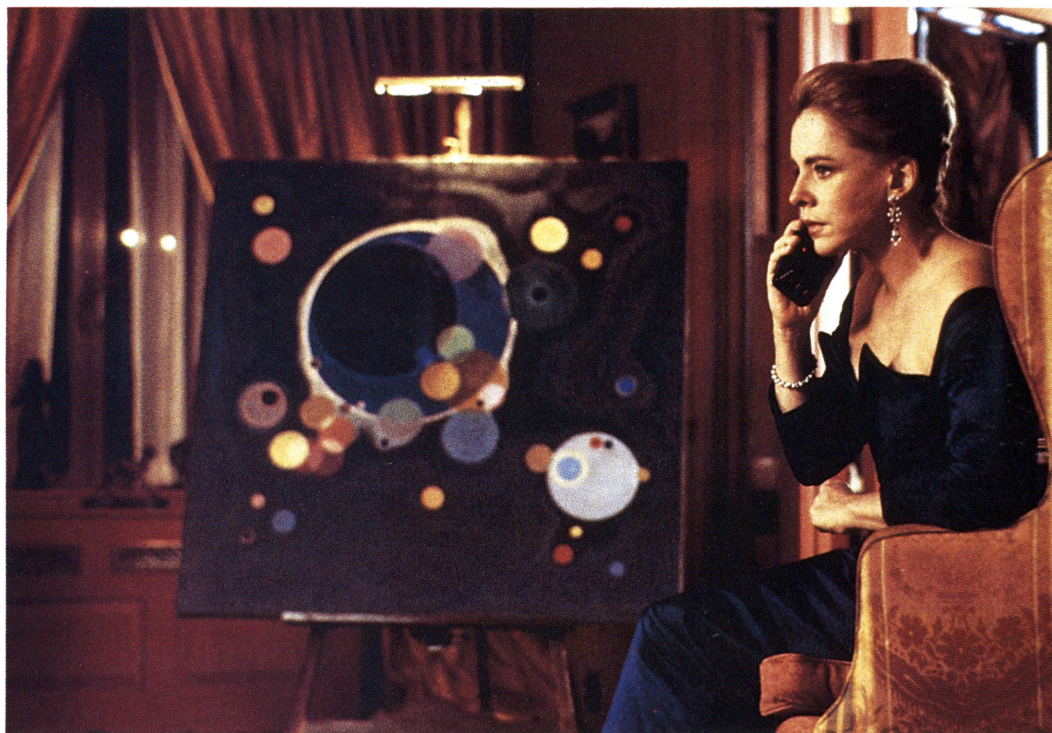
Baker calls *Six Degrees* a "part warm and part cold film," and it was no easy feat to light characters representing both qualities in the same frame. He credits production designer Patrizia Von Brandenstein, who won an Academy Award for her work on *Amadeus*, for choosing "incredibly warm colors for me to light." The Kittredge penthouse, where half the film was shot, is perched high over Manhattan, a cocoon protected from the unsavory elements that lurk below. The "colder" scenes take place in Central Park at night, or alongside stark tenement apartments. There's also "an array of scenes in the city, from sleazy downtown Manhattan to ritzy Fifth Avenue," Baker points out. The nuances of so many diverse environments gave him a challenge that he relished. "It was a rare opportunity to shoot so

many very different locations," he says.

Warmth was a main criterion for Baker when he selected a full set of Panavision Super-speed lenses, ranging from 14mm to 300mm, for his Panaflex Platinum. "I wanted lenses that had a warm quality," he explains. He made several tests and found that the Superspeeds lent the right emotional as well as visual color. *Six Degrees*, Baker points out, isn't a zoom-oriented picture. "I'm not

a great fan of zoom lenses," he maintains. "I only use them to get out of a difficult situation, like when you're in a tight interior doing a dolly shot and one prime lens won't give you the size you want from one end of the dolly to the other. In that case, you'd use a zoom and alter the size of your lens throughout the dolly movement."

Baker almost always shoots his films with anamorphic lenses, and *Six Degrees* was originally intended to be anamorphic as well. But the large number of night interiors had him shooting at the minimum aperture in order to balance both interior and exterior light levels, and he felt that shooting at those apertures on anamorphic lenses was not satisfactory. "To expose the interior well we chose to shoot at stops of no more than 2.5 in the apartment," he explains. "You've got really minimal depth of field at those stops, so we didn't want to go straight to 1.85." Then he entertained the idea of shooting in Super 35 to get a wide-screen look. Optical tests were done, Baker was pleased, and the decision was made: *Six Degrees*



Opposite: Social chameleon/con artist "Paul Poitier" (Will Smith) has a high-society sucker on the line. This page, top: Art dealer Flan Kittredge (Donald Sutherland) shows off the "chaos" half of a two-sided Kandinsky canvas that was actually designed by playwright John Guare. This page, bottom: Ouisa Kittredge (Stockard Channing, reprising her original Broadway role) fields an earnest phone call from the wayward hustler Paul.



The Kittredges and their fellow dupes (Bruce Davison and Mary Beth Hurt) find that the list of those who have been tricked by Paul is getting longer every day.

would be a Super 35 film.

Whenever he can, Baker uses lighting — rather than filtration — to achieve a desired look. “I seldom use filters,” he explains. “Ladies sometimes like diffusion filters to soften their faces. But I believe in doing that with lighting.” Occasionally he’ll use a low-contrast filter on night exterior work, “and really only to bloom streetlights or headlights on motor cars.” Other than that, except for the occasional use of daylight correction filters, he prefers to use his own techniques to create a filter effect.

Six Degrees may take its audience outside of the Kittredge apartment, but it hardly qualifies as an action film: characters don’t fuel audience adrenaline by aiming 38-caliber revolvers or leaping from burning buildings. In portraying the real motion of the picture — the emotional turmoil created as the impostor Paul (Will Smith) dupes a social group that believes itself invulnerable — Baker used camera movement to provide emotional buildup and create a sense of unrest. His Panaflex was seldom static, and tended to move “in eccentric

ways, to introduce a sense of unease.” He created this nervous feeling by keeping characters’ heads stationary in the frame while the background moved, but “not like a seasick camera swaying around so it makes the viewer nauseous, and not in a gratuitous way either.” Baker used subtle camera motion to convey the fear and outrage of the Kittredge crowd’s response.

Will Smith was lit from the side to narrow his face: “It wasn’t really meant to make him look deceitful,” says Baker, “it was just that flat light on his face made it look wider, which changed his character.” Characters often require different lighting styles, and Baker admits that when the actors are all together in one frame it’s difficult to stay true to each style without compromising. “You can’t light each one individually when they’re all under the same light, but what you can do is cheat a bit in a close-up and go back to their special lighting in that frame.”

Also difficult was filming in the Kittredge residence, which was a real Fifth Avenue apartment rather than a set. For

five weeks, Baker had to find ways to hide lights and turn corners in square rooms under seven-and-a-half-foot ceilings. “It would have been much easier in a studio, with wild walls and the ability to get outside a window and look in,” he points out. But the apartment on the 17th floor over Central Park offered no such vantage. “Technically, to do a shoot like this in five weeks would be impossible,” the cinematographer adds. But Baker didn’t spend years honing his resources in Australia for nothing.

The Kittredge apartment, surrounded by windows, has a full view of the Manhattan skyline, which was one reason the location was chosen. Baker notes, “This film is about New York. When you look out the windows after dark, the night moves. Lights twinkle. Traffic flows.” But the windows also posed problems: 86 percent of the apartment shoot was done at night, and Baker was constantly looking at reflections in the windows. A visitor to the set might have wondered if Baker had hired his crew from a monastery: “Everybody shuffled around in long black robes,” Baker explains, “so they wouldn’t reflect in the windows. We couldn’t get any lights in the windows because they were constantly in shot, and the square rooms made it hard to do 360-degree dolly moves.”

Where, under the low ceilings, could Baker place lights? “That was the big question,” he admits. He and his crew managed to conceal them so well that “any technical person who sees the film will realize, if they know it’s an actual location and not a set, that hiding those lights was a real achievement.”

Baker’s ingenuity came to his rescue and he used simple tricks to solve a complicated problem. “We didn’t bring in any new, special lighting units. We just had the full HMI package for daylight and incandescents for nights.” The incandescents were small, with no unit of more than

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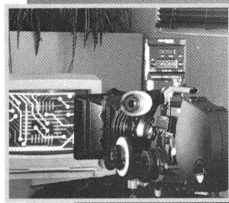


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one kilowatt in the whole package. He often lit with lightbulbs, concealing them behind picture frames, vases of flowers, and books on a shelf. At one point, he hid a strip of fluorescent lighting behind a door. "It's nothing new," he admits. "But it worked."

Day scenes in the apartment were no picnic either. Baker had to match light levels to the actual exterior daylight, "which was pretty sunny." Problems arose: "We'd put a light next to the camera to hide it; then an actor would come close to the camera, and the exposure at the other side of the room would drop four or five stops. Normally you'd be able to get a light back further, so the exposure would be the same across the room." Baker was forced to contend with actors moving through a full-stop light change in one small area. "It was beyond difficult, but it worked out," he recalls. "It was a nightmare at first, but I'm proud of the way it looks."

Not all the tricky scenes were indoors. An unusual car rig was designed to get a rarely-if-ever-seen shot. Schepisi and Baker, who always tried to go one step further during their commercial production days in Australia, are still looking ahead. "Fred still wants to do more than the last person," says Baker. This time, he wanted to shoot from inside a Mercedes as the car travels down a highway, then move through the car window to look back at the passengers.

"Normally, a car is towed so you can blast light in the actor's face without worrying about how he'll be able to see and drive," says Baker. "But this time Donald Sutherland actually drove. We had a special rig positioned in the back seat of the car, shooting from behind Sutherland and Stockard Channing as they looked through the windshield up ahead. There was some dialogue, then we pulled out through the window to a shot of them looking through the windshield."

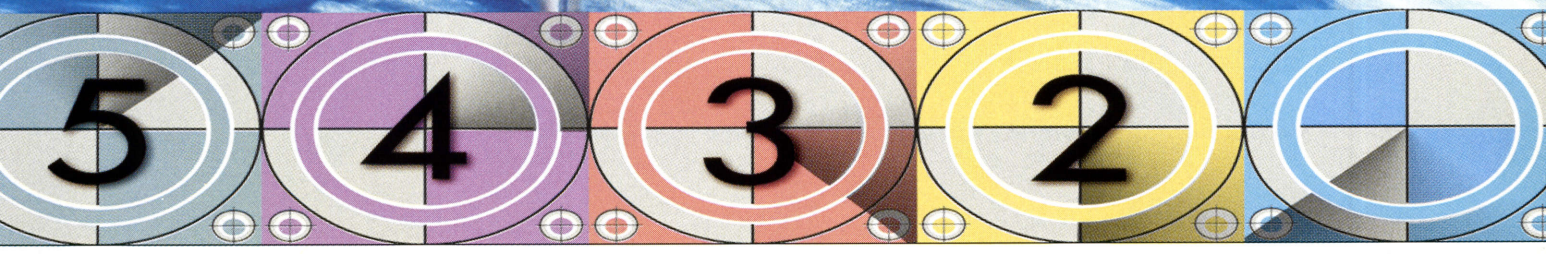


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The shot was done twice — once as a night scene, “which was relatively easy to light,” then during the day, “which wasn’t easy, because the car was traveling at 60 mph.” Baker operated the head on a dolly track by remote control while he was crammed in the car’s trunk. A focus puller and grip held onto the rig at the side of the car.

Baker shot 95 percent of *Six Degrees* on his favorite stock, Kodak’s 5296. He’d done some prior tests with Eastman’s new 5293, and “wasn’t crazy about [the results,]” but ended up using the 93 on the film’s day scenes, which constituted five percent of the film. One day, Baker mixed the 93 and 96 stocks while shooting in bright, sunny daylight in Central Park. “The results, to me, were far better with the 96 than the 93,” he says. “Most people I know in this profession would disagree with me, but it worked because of the way I exposed the stock. 96 needs plenty of exposure; you can’t underexpose it too well, but if it’s exposed properly, it’s great stock. I love it.”

Almost every frame of *Six Degrees* was shot in New York City. Baker has no complaints, and calls Manhattan “as easy to work in as any other city if your production is well organized; you get out of your car and you work.” But despite the production team’s efforts to convey realism, even to the extent of borrowing a real Degas, *Six Degrees* almost went to Toronto. Schepisi, producer Arnon Milchan and New York Film Commissioner Richard Brick negotiated to keep the production at home. “Fred was keen on shooting in Manhattan,” Baker explains, “and it was a good choice. When a film is supposed to be in New York, it’s never the same if you shoot some second unit here and then go to Canada and work in a studio or cheat New York locations. This was such a real location that there’s not one frame that won’t reek of New York.”

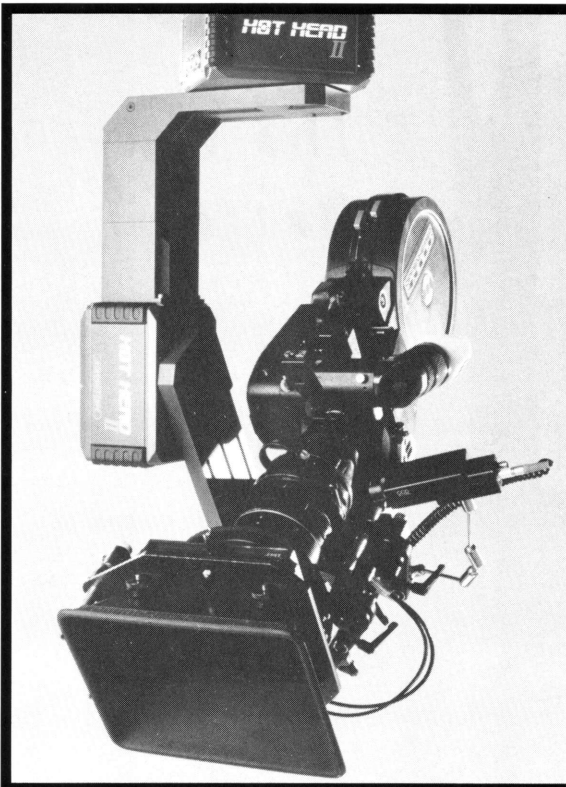
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ASC International Award to Jack Cardiff, BSC

The Society salutes the work of the renowned British cinematographer and director.

by Bob Fisher

Once asked to name the best color movie ever made, Natalie Kalmus, the daughter and protégé of Technicolor inventor/founder Dr. Herbert Kalmus and Technicolor consultant on a number of classic films, offered her choice without a moment's hesitation: 1948's *The Red Shoes*, written and directed by Michael Powell and Emeric Pressburger. Based on a Hans Christian Andersen fairy tale, the story concerned an obsessive ballerina and her trying personal relationships. If you've seen it, chances are that you still have vivid memories of the magical ballet sequence featuring Moira Shearer.

But not everyone agrees with Natalie Kalmus. Many aficionados believe *Black Narcissus* is the best Technicolor film ever made. This 1946 film, also directed by Powell and Pressburger, focused on five nuns and their struggle to overcome great odds while building an orphanage in a mythical mountain setting. *Black Narcissus* earned critical acclaim in many categories. The critics lauded the camerawork with comments such as "Dazzling colors, rich pastels. . . never garish."

Both films were photographed by Jack Cardiff, BSC, who won an Oscar for *Black Narcissus*. At the time, Cardiff already had some 30 years of experience, but the two pictures were just his second and third assignments as a director of photography. Prior to his career in feature-film cinematography, he had been a child star, assistant cameraman and operator, as well as a Technicolor consultant and travelogue cinematographer

extraordinaire.

Cardiff collected subsequent Oscar nominations for *War and Peace* and *Fanny*. His eclectic body of work also includes such unforgettable films as *The African Queen*, *The Prince and the Pauper*, *Pandora and the Flying Dutchman* and *The Barefoot Contessa*, as well as the contemporary adventure films *Rambo: First Blood, Part II*, *The Vikings* and *Conan the Destroyer*.

In mid-career, Cardiff tried his hand at directing and

him with the second annual 1994 ASC International Award. Freddie Young, BSC, took last year's inaugural honors.

"This award is reserved for cinematographers of international repute who have made extraordinary contributions to the art form," says ASC President Victor Kemper. "Jack Cardiff has a remarkable body of work which has made a deep and lasting impression. His career spans a large part of the history of the motion-picture industry."



became the only filmmaker to earn Oscar nominations for both directing and cinematography: in 1960, he received the Golden Globe and New York Film Critics awards, along with an Oscar nomination, for directing *Sons and Lovers*. Freddie Francis, BSC, also won an Oscar for his cinematography on the film.

This year, in recognition of Cardiff's extraordinary achievements, the American Society of Cinematographers will present

Cardiff was born in Yarmouth, England in 1914, to parents who performed in vaudeville and occasionally acted in the nascent entertainment form of motion pictures. At age four, Cardiff made his first onscreen appearance in a film called *My Son, My Son*.

The young thespian went on to star in *Billy Rose* and *The Card*, and performed at different times with Dorothy Gish, Will Rogers, Pola Negri, Adolphe

Menjou and Violet Hobson. By the time he turned 11, however, the acting assignments were getting further apart; Cardiff was becoming too old to continue as a child star. His last performance was in *Tiptoes* '27. In 1928 he got a job as tea boy and runner at British International Studios in Elstree.

One day, during a shoot, German cinematographer Werner Brandes shouted "Hey you!" to the 14-year-old Cardiff, and told him to rotate the lens from one pencil mark to another when he gave the word. Later, when Cardiff asked what he had done, Brandes replied, "You followed focus, sonny."

Cardiff's interest in the camera grew. His next job was working as a clapper boy with various cinematographers, including Claude Friese-Green,



whose father, William, had invented and patented one of the first motion sequence cameras in 1889. Only 30 years after that historic invention, Cardiff was getting his own career underway.

Cardiff recalls that operating the hand-cranked machines took more than a rock-steady hand and the ability to turn the crank at a consistent 16 frames per second; one also needed a sense of drama and flawless eye-hand coordination.

Cardiff collaborated with some extraordinary filmmakers

who were defining the emerging art form. "I was working in the special effects department with Alex Korda's company at Denham Studios," Cardiff recalls. "Hal Rosen [ASC] had come over from the States, and the studio manager asked if I wanted to operate for him. Hal was firing a lot of operators, so I said no. But finally I was the only one left, and I accepted the job."

In 1937, while Cardiff was operating for another famous Hollywood cinematographer, Harry Stradling, ASC, on

Knight Without Armour (starring Robert Donat and Marlene Dietrich), he was asked to interview for a job that would take him to Hollywood to learn about a new color system called Technicolor.

A half-dozen or so operators were being interviewed. Several of them had already been quizzed, and they warned Cardiff that the questions were very technical and difficult. He didn't have high hopes, but the questions proved to be even worse than Cardiff had anticipated. The interviewers asked where he had attended film school, and probed him with technical questions about polarizing light and the qualities of different camera negatives.

Cardiff told his inquisitors that they were wasting their time talking to him. There was a shocked silence, after which someone asked him how he hoped to become a cinematographer.

"I told them I studied the works of painters [like] Vermeer, the Old Masters and the Impressionists," he says. "I could also describe and match how the light fell in a subway, in my house, or

Opposite: Cardiff puffs a pipe in a reflective moment. This page, above: The cinematographer (left) checks a makeup man's work on Ingrid Bergman during filming of the Alfred Hitchcock picture *Under Capricorn*. This page, left: Cardiff always enjoyed holding impromptu strategy sessions with actors. Here he confers with Robert Helpmann, Moira Shearer and Leonide Massine on the set of the Michael Powell/Emeric Pressburger ballet fantasy *The Red Shoes*.

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on the street at night. They asked a few questions about lighting, and then someone inquired about a face in a Rembrandt painting. I said the light was on the right side of the face."

Cardiff got the job. He always suspected that he was chosen because he admitted that he had a lot to learn about photography. Instead of being sent to Hollywood, he was put to work as an operator with Ray Rennehan, ASC, one of the most renowned masters of the Technicolor process, on a picture he was shooting at Denham Studios called *Wings of the Morning*. It featured Henry Fonda and Annabella.

Afterwards, Cardiff worked for Technicolor in London, where the company had built a lab and were installing and testing equipment. Cardiff shot a half-dozen theatrical commercials which provided an opportunity for him to experiment. Subsequently, a five-year series of Technicolor theatrical travelogues called *World Window* took him to every corner of the world through 1942.

"There were only four Technicolor cameras in the country, and they were very valuable," Cardiff says. "Every night the assistant took the camera to his bedroom so he could keep an eye on it. Every three days he disassembled it, took out the prism, and checked the alignment. There were two gates and three film strips, and tolerances had to be within 8/10,000ths of an inch."

There were some great adventures along the way. Cardiff recalls shooting at the top of Mt. Vesuvius during a volcanic eruption. It took 40 local guides to haul all of the camera equipment to the top of the mountain. "We shot all day. There was burning lava all around us," he says. "It burned the tripod and our shoes. One of the crew ended up in the hospital. But the film was magnificent."

In 1942, he started work on a two-year documentary film

project, a tribute to the British Merchant Navy. Cardiff sailed with a convoy from London to New York, and then back again. The film was authentic in every way; in fact, four ships were sunk by U-boats in one attack on a convoy. Cardiff spent six months shooting film in a lifeboat to show the audience what that experience was like. The film was called *Western Approaches* in England, and *The Raiders* in the United States.

Cardiff's first experience as a feature-film cinematographer was a 1943 Technicolor film called *The Great Mr. Handel*, on which he shared duties with Claude Friese-Green. Cardiff served as Technicolor consultant, but he also shot half of the film under Friese-Green's watchful eye.

Immediately after World War II, Cardiff shot second unit on *The Life and Death of Colonel Blimp* (another Michael Powell/Emeric Pressburger film) and *Caesar and Cleopatra*. The assignments were miserable experiences for Cardiff, who felt that the first units were having all the fun. But there were moments of serendipity. One day while shooting *Colonel Blimp*, he was lining up a difficult shot of a dozen stuffed animal heads on a wall. Cardiff was so busy lighting that he didn't notice that director Powell was scrutinizing his every move. He asked Cardiff if he wanted to shoot his next film, and promised to call within a year. True to his word, Powell later called Cardiff in Egypt, where he was shooting second unit for *Caesar and Cleopatra*. He invited him to shoot *A Matter of Life and Death*, which was renamed *A Stairway to Heaven* in the United States. The picture marked the beginning of his cinematic collaboration with Powell and Pressburger, who co-authored scripts and collaborated on directing.

The next year, Cardiff filmed *Black Narcissus*, partially on location in the Far East. One day during production, Powell

asked Cardiff if he liked ballet. The director was shocked when Cardiff expressed disinterest. Powell informed him that his next job would be on a ballet film called *The Red Shoes*. He advised Cardiff to learn about ballet by attending performances at Covent Garden. Upon his return to London, Cardiff watched several shows a week for many months, and spent considerable time backstage during rehearsals, soaking up ambience.

"All of us felt that we were working on a classic when we filmed *The Red Shoes*," Cardiff says. "I was a great fan [of ballet] by then. Moira Shearer and the other ballet performers and actors were totally engaged in the story. Michael [Powell] was like a symphony orchestra conductor, drawing every ounce of creative talent from everyone."

Cardiff exploited the use of color for the Technicolor assignment. He photographed the fantasy ballet sequences with diffused lighting and filters on the lenses to create a dreamlike quality, and contrasted that approach by filming real-life scenes in deeply saturated, luminous reddish colors.

"We shot some tests, and got to use a few of those ideas in the film," Cardiff recalls. "There are sequences with people jumping from heights in slow-motion that we filmed with a wide-angle lens. There's one shot where a dancer is twisting in mid-air. He appears to float as light as a piece of falling paper."

Every movement was precisely choreographed with music, which had been recorded first. To capture the leaping dancer, Cardiff altered the frame rate from 24 images a second to 96, and then back to 24. The actual leap happened in a mere two-second span, but it seems to last for an eternity, a tricky feat given Technicolor's slow lenses and cumbersome cameras. "The lenses were actually very good, but the Technicolor film was slow," Cardiff notes. "I remember that

we were shooting at F-1.5, and we must have had 650 foot-candles coming from those big arc lights."

After all of the work, the British public wasn't ready for *The Red Shoes*. It opened in London to mixed reviews and with no publicity. "Fortunately, a distributor from the United States saw it with his family, and they loved it," Cardiff recalls. "He brought it to the Bijou Theatre in New York, where it played for two years. Years after it opened, we were told we were right. It was a classic film."

In 1949, Cardiff photographed *Under Capricorn* with Alfred Hitchcock. "The first time I worked with Hitchcock, I was still a clapper boy," he says. "We used a very mobile camera. There were ten-minute-long shots with no cuts or changes of camera angle. That was very novel in those days. We would start a scene in the kitchen, move through a hallway into a drawing room, go back into the hallway, up the stairs, and down a passageway to a bedroom, where we photographed Ingrid Bergman. Then we turned around and retraced our steps. There was dialogue every step of the way."

Practically every scene consisted of long, moving shots. The idea was to involve the audience in the picture more as eavesdropping participants than as spectators. "There were exceptions, but they weren't any easier to shoot," Cardiff recalls. "There was one shorter, isolated shot where we had the cast seated around a long Georgian table. There were four or five people on each side. Ingrid Bergman was seated at the head of the table. Hitchcock wanted a long tracking shot ending with a close-up on her face. He wanted a low angle, but we had a big blimp on the camera to muffle sound, and that made it difficult. We took the long shot, and then as we moved in tighter, the table was actually cut into six, seven or eight sections. As we moved past the actors on either side, they fell away

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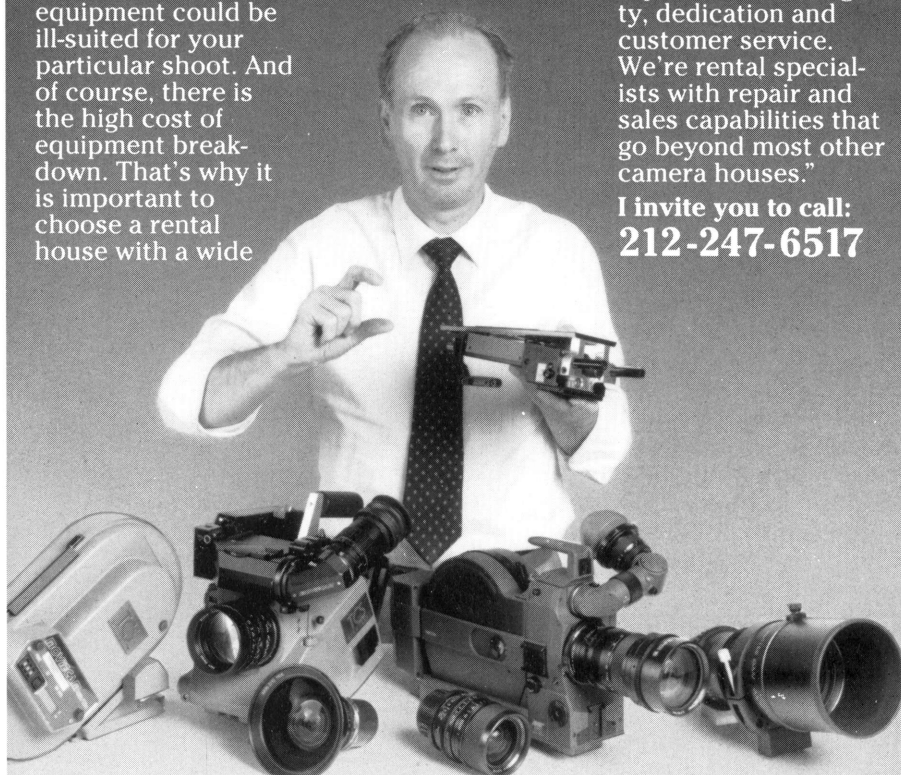
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backward onto mattresses. We came right down the middle of the table into a close-up."

It was an extraordinary way to shoot a film in those days. Cameras were unwieldy, films were relatively slow, and there was no reflex viewing. "No one would call it beautiful photography," says Cardiff, "but the operator did a wonderful job. I thought he deserved an Oscar, but that's not the way it's done."

Under Capricorn was followed by such films as *The Black Rose*, starring Orson Welles and Tyrone Power, and *Pandora and the Flying Dutchman*, starring Ava Gardner and James Mason. During that period, Cardiff worked with numerous other actors and actresses who have subsequently become legendary characters in film lore, but the film that everyone asks Cardiff about is *The African Queen*. Filmed in 1951 in what was then the Belgian Congo, the picture is still popular today on television and home video. Chances are that well over a billion people have seen Katharine Hepburn and Humphrey Bogart play out their love story against the background of a World War I struggle between two colonial powers, Germany and England.

The film's director, John Huston, co-authored the script with James Agee. The images that filmgoers most often recall are the vivid and stunningly realistic African backgrounds, and the faces of Hepburn and Bogart. What Cardiff remembers was that everything that could go wrong, did.

"We planned to shoot the film in British territory at Lake Victoria, which is about 3,000 feet above sea level," Cardiff remembers. "It was beautiful. It was almost like being on a holiday. But Huston went on a location scouting trip and sent a cable saying he didn't like the location. It was too pretty. A couple of weeks later, there was another cable, saying he had found the perfect location in the Belgian Congo. It was a two-mile jeep

ride through a savage jungle. The water was absolutely black. We were supposed to sleep in tents in a jungle that was filled with poisonous snakes."

The cast and crew crowded onto a houseboat, and everyone except Huston and Bogart got sick. Cardiff recalls that doctor after doctor attempted to keep the cast and crew healthy enough to work. "Once we had to stop production for a week," he says. "I had a 104- or 105-degree temperature, and I wasn't the only one. The doctor said we had to rest and eat better. The company brought in about 50 sheep from Nairobi. When we woke up the next morning, crocodiles had eaten them."

About a week before production wrapped, a new doctor finally discovered the cause of the illnesses. The cast and crew were supposedly drinking "filtered" water pumped onto the houseboat from the river, but there were no filters in the pump; someone had removed them. Huston and Bogart were unaffected, Cardiff explains, because they were drinking something stronger than water.

"Years later, I met Steven Spielberg, and he told me that he had always wanted to meet the cameraman who shot *The African Queen*," Cardiff says. "It was a wonderful story with a great director, and the casting was right. But I was never particularly proud of the cinematography. Everyone was ill, and we did a lot of shooting from a small boat. But that's the way it goes. If the picture is a success, everyone likes the photography."

There were many other memorable films, too numerous to describe in great detail. It was fitting that Cardiff filmed *The Magic Box* in 1952, commemorating the 60th anniversary of cinematography and the special contributions of William Friese-Green. Cardiff went on to shoot *The Barefoot Contessa*, starring Ava Gardner, in Rome with director Joseph Mankiewicz; the picture drew large audiences and

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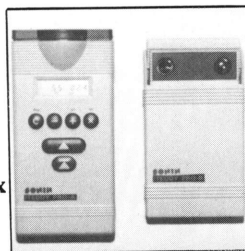
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earned kudos for Cardiff. He also traveled to Mexico to photograph *The Brave One*, which marked the return of blacklisted screenwriter Dalton Trumbo.

Ask him to choose his favorite from his body of work, and Cardiff will probably name *War and Peace*, an epic based on the Tolstoy novel. Filmed at locations in Yugoslavia and Italy, it was produced by Dino de Laurentiis and directed by King Vidor, with a cast that included Henry Fonda, Audrey Hepburn and Mel Ferrer.

Vidor and Cardiff employed fluid camera movement and ingenious staging throughout the film. The hopelessness of Napoleon's retreat is conveyed through extreme high-angle coverage; a white mist lifts to reveal the true proportions of disastrous battle at a riverbank. Cardiff earned his second Oscar nomination for *War and Peace*. (Henry Hathaway and John Wayne were so certain Cardiff would win that they organized a celebration dinner the night before the Academy Awards, but the award went to *Around the World in 80 Days*.)

In 1958, 20th Century-Fox gave Cardiff the opportunity to film a low-budget mystery thriller called *Intent to Kill*, and in 1960 he directed *The Scent of Mystery*, a gimmick film that depended heavily on tell-tale odors that were let loose into theaters. That adventurous nature paid great dividends later in 1960, when he reached the pinnacle of his ability as a director with *Sons and Lovers*, a movie adapted from a D.H. Lawrence novel that starred Dean Stockwell and Trevor Howard.

The picture that brought Cardiff back to cinematography was *Fanny*, a 1961 adaptation of a Joshua Logan musical starring Leslie Caron, Maurice Chevalier and Charles Boyer, but he continued directing during the 1960s and early '70s, compiling a notable list of credits that included *My Geisha*, *Girl on a Motorcycle* and *Young Cassidy*. During the 1980s he continued his work as a

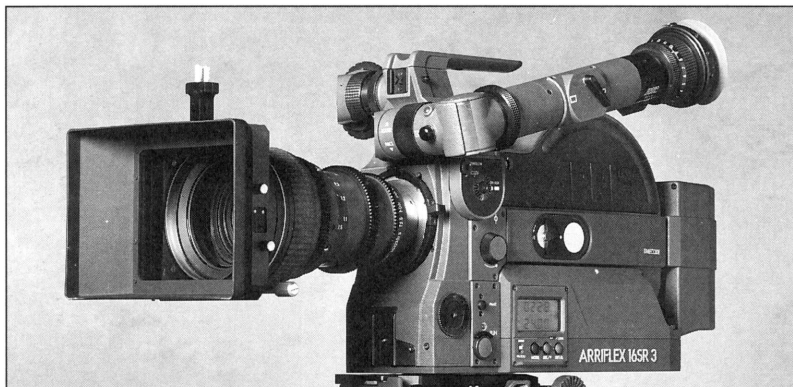
cinematographer with *Death on the Nile*, *The Awakening* and *Dogs of War*.

His appetite for exploring new concepts led him into shooting two Showscan films, *Call From Space* and *The Magic Balloon*, during the late 1980s. The projects marked the first use of the CP65 camera, now more typically called the Showscan camera. Up until that point, there was some skepticism about whether large formats like Showscan could be used for narrative storytelling. With a smile, Cardiff notes that the two short (25- and 45-minute) films were a piece of cake compared to his experience shooting Technicolor movies.

He averaged 15 setups a day. "The pace was about the same as it would be on a 35mm film," he says. "There were no limits imposed by the format. The camera is mobile, and it gave me a broad range of 65mm lenses from 28mm to 600mm. We were shooting with the Eastman EXR 5296 500-speed film, which was new at that point. It gave me the latitude to pull deep stops."

Having such options is a luxury for Cardiff. Back during the late 1930s, when he was shooting Technicolor travelogues for *World Window*, the company got permission to shoot in St. Peter's Cathedral, which had never been done before. Cardiff was limited to the use of five 2K lights. The Technicolor film in those days was painfully slow, but Cardiff came up with a solution: moving back as far as he could, he exposed 10 feet of film, rewound it, and exposed it again, repeating the process eight times. Then he shot the next 10 feet. "In effect, I was shooting a one-second exposure on each frame," he says. "I did it by instinct, and it all worked out perfectly. We got beautiful footage."

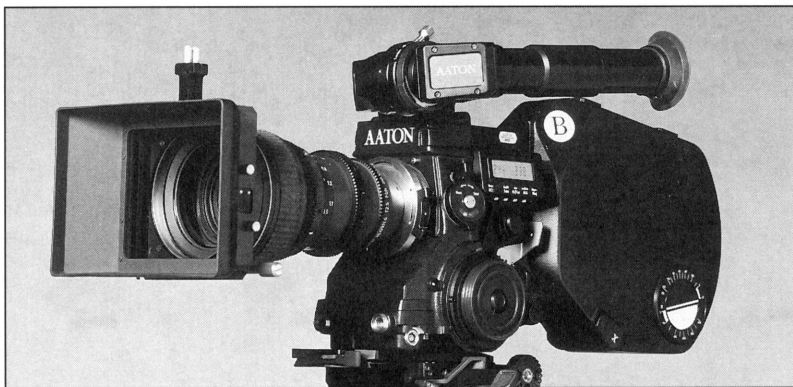
What's next for Cardiff? "I've learned, seen and experienced so much," he says. "It's been a long journey, and I'm writing a book about it. But you know how it is. You are always looking out for the next thing." ❧



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Energizer Ad Recharges *King Kong*

Filmmakers exploit digital technology to painstakingly recreate look of classic film.

by Stephen Pizzello

It's been 60 years since a giant ape known as *King Kong* first toppled off the Empire State Building and plunged to his doom in the streets of Manhattan. But with the help of the latest computer compositing techniques, director Danny Klineman and cinematographer Curtis Clark, ASC recently conspired to revive the great beast and once again send him hurtling toward the pavement.

Working closely with the Venice, California-based advertising firm Chiat/Day Inc., the filmmakers crafted a clever and finely detailed homage to the 1933 film for a series of ads currently airing as part of Energizer Batteries' latest television campaign. In the ads, a succession of famous film villains attempts to destroy the infamously indefatigable Energizer Bunny, who inevitably manages to escape unscathed. The campaign was masterminded by Chiat/Day creatives Craig Tanimoto and Hillary Jordan, who were charged with the task of reintroducing Energizer's main mascot.

After developing the concept over a year and a half, the agency creatives were introduced to Klineman by Chiat/Day producer Richard O'Neill. Klineman, a former illustrator from England who made his filmmaking mark as a director of music videos (including collaborations with Madonna, Prince, Fleetwood Mac and Thomas Dolby, among others), has been concentrating on commercial

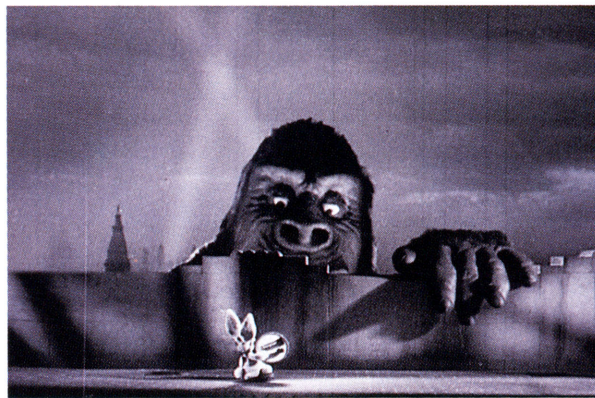
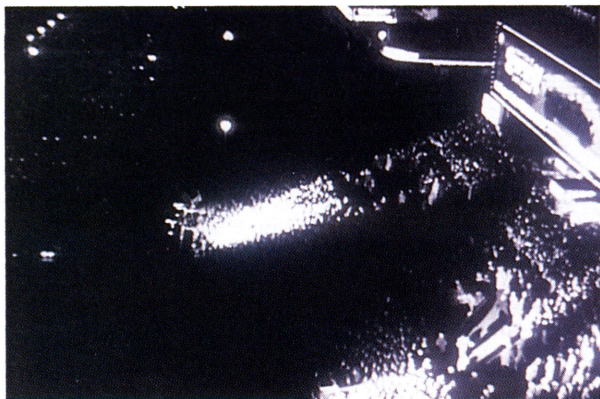
work since the late 1980s. "I was being restricted a bit in terms of what I could do in the music video realm, because the budgets were going down," the soft-spoken director said while supervising a "Kong" postproduction session at the Los Angeles-based facility 525. "I decided to concentrate more on commercials, although I still do videos occasionally."

After landing Klineman to direct the spot, Chiat/Day hired veteran cinematographer Curtis Clark, ASC to craft the project's complex visuals. Early on, Klineman and Clark realized that they were facing a particularly intriguing challenge. Although the ad's simple storyline could have been accomplished in a number of ways, Klineman and the agency creatives agreed that the best approach would be to recreate the look and feel of the original film as closely as possible. "This job was worthwhile to me on two counts," Klineman maintained. "One, it was a chance to recreate a real piece of movie history, and two, it was a very good, creative idea for a commercial."

The plot of the two-part *King Kong* ad was fairly basic: in order to enhance his position in the ultra-competitive world of battery sales, the chairman of the fictional Supervolt corporation (played by Rip Torn) plots to destroy the Energizer Bunny. Enlisting the aid of the gigantic ape, the Machiavellian mogul presents the somewhat simple-

minded Kong with an illustrated, easy-to-understand instruction card (battery=banana), and sends him into the New York streets to hunt down his long-eared, drum-pummeling prey. The ape soon scales the Empire State Building, where he peers into a window and spots an attractive blonde woman. Checking his instructions, he spurns the woman and continues his climb after getting a toehold on the windowsill. He finally discovers the Bunny marching along the building's roof, and is about to fulfill his mission when the woman, annoyed that Kong has snubbed her, slams the window on his toe and sends him sailing into the streets below.

In attempting to commit this comic vignette to film, Klineman, Clark and various crew members made the most of their uncommonly ample preproduction period of roughly four weeks. "Filmmakers often complain about the lack of prep time on commercials, but this is a shining example of the opposite situation," Clark noted. "The discussion period prior to shooting, during which I conferred closely with Danny, made this spot possible. Too frequently, the director of photography is brought in at the last minute. Then, when it doesn't work out, everybody shrugs their shoulders. Considering how much time, effort and money is spent on commercials, you would think that prep time would be factored in more generously than it tends to be. This



Clockwise from upper left: A crowd shot from the original 1933 film; Kong scaling the Empire State building; the digitally composited scene in which Kong establishes a toehold; the animatronic Kong eyeballing his furry prey.

project definitely went against the norm. If you have a clear concept, and are determined to achieve a high standard of quality, then having sufficient prep time is essential."

Klineman spent the weeks prior to the shoot researching the production methods employed on the original film; one of his main reference texts was *The Making of King Kong*, a definitive work penned by Orville Goldner and former AC editor George Turner. The director even made a trip to London's Museum of the Moving Image after hearing that the institution had one of the original Kong models, but discovered that the miniature was actually from a later ape film, 1949's *Mighty Joe Young*. He later learned that the original Kong armatures had been stripped so they could be reused for the 1933 sequel *Son of Kong*. Without an actual figure to copy, Klineman realized that his own Kong would have to be copied from film stills supplied by the British Film Institute. This fact led him to

make several carefully considered departures from the methods employed on the original picture.

"I decided in the end that it was best not to do this commercial with stop-frame animation, because stop-frame is very time-consuming; you can spend a day or two doing one take, and if you don't like it you have to go back and start again," he said. "I've done some work with animatronics before, so I got The Creature Shop in London to build a new King Kong. The main difference between our Kong and the original is that ours was human size. The face was animatronic, but there was also someone inside to move the arms and turn the head. I did a lot of film tests in London, because I had this theory that we could simulate the look of stop-frame animation by shooting at different frame rates and dropping frames. We tried various combinations in the tests, and found that we could get the look we wanted by shooting at 30 frames per second while having

King Kong move at quarter-speed. By doubling every eighth frame and dropping all the other frames, we could get the motion to look as if it was happening at normal speed, but there was enough information missing to make it resemble stop-frame. The advantage of this was that even though a five-second piece of action took twenty seconds to film, we could still do ten or fifteen takes and get the one we wanted, instead of spending all day for just a few takes. When you're dealing with an advertising agency, there are lots of different opinions going 'round, and if we'd had to do four or five different takes with stop-frame animation, we'd have been at it for months. Our solution worked pretty well."

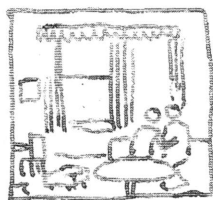
Getting the ape's movements just right involved a few other ingenious techniques. The Creature Shop's animatronic Kong face was equipped with a computer to allow the operator, who worked via remote control, to work out the facial expressions



⑤ KONG LOOKS IN WINDOW [2-2]



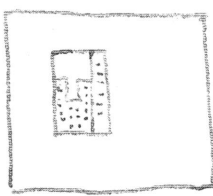
⑥ KONG CHECKS POSTER [2]



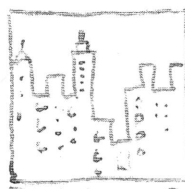
FOREGROUND
PLATE FROM
MOVIE



OUR KONG



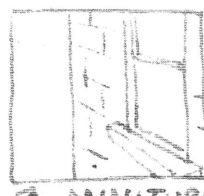
BEHIND KONG
BUILDINGS FROM
FOREGROUND PLATE



BACKGROUND
PLATE OF
BUILDINGS
FROM MOVIE



OUR KONG



MINIATURE
MODEL
SET

(SHOT
TOGETHER)

A detailed look at a pair of frames from Klineman's storyboards. The two large frames illustrate how the finished shot will look; the smaller frames below break the shots down into their composite elements.

in real time, save them on the computer, and then play them back at the required quarter-speed tempo. Klineman also needed to find a way to simulate the random matting of Kong's fur that occurs in the original film; while manipulating the miniature Kong models, the animators of the 1933 classic left finger indentations that caused the ape's hairy coat to ripple onscreen. To reproduce the effect, Klineman had crew members train air hoses on the human-size Kong replica. The strategic blasts of air, combined with the dropped film frames, provided suitably kinetic fur movements.

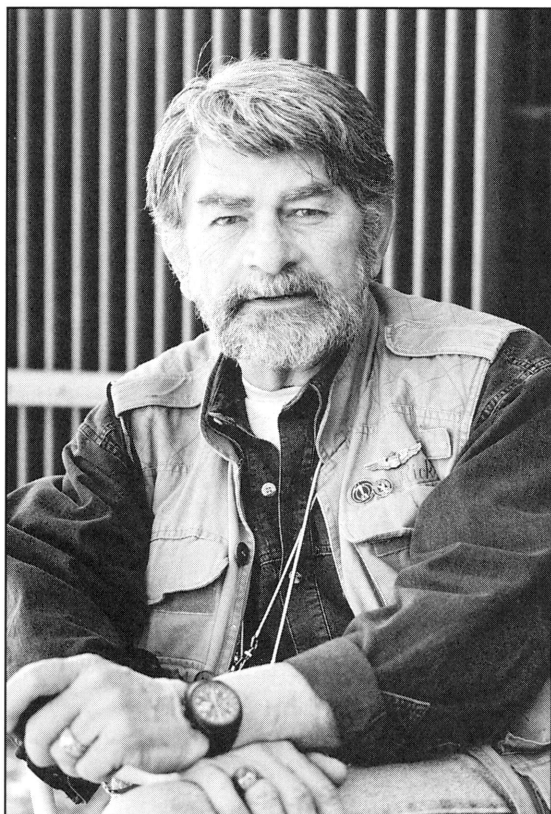
Once Clark came aboard, the collaborators turned their attention to matters of light and lens. In seeking an absolutely au-

thentic look, the cinematographer decided to employ the oldest lenses available. First assistant Dick Meinardes was sent off to search through a stockpile of Panavision lenses that hadn't been used in years. "We basically wanted to find a set of lenses that were characteristic of the kinds of optics that were used in the '30s or '40s," Clark said. "This was a very important consideration because of the differences in definition, contrast, and so on that exist between older lenses and those used today. After sifting through hundreds of lenses, Dick tested to find a set that would match the characteristics of the Baltar lenses that used to be manufactured by Bausch and Lomb. Although we weren't sure which lenses were used on the

original film, we knew they had to be either Baltars, Schneiders or Cookes, and the performances of those three types of lenses were not radically different. The Baltars and Super Baltars were the industry-standard lenses at the time, and had characteristics that were typical of the era, so we used those as our yardstick. We were looking for a set of lenses that would be practical for us to use, which at the same time would provide us with the look of the original footage. The lenses we eventually settled on were Cookes that had been put in Panavision housings — an early set of Panavision prime lenses. The actual manufacture of the glass probably dated back to the '40s. Obviously, today's lenses, like the Zeisses, have much finer

Director of Photography Ric Waite ASC talks about using anamorphic equipment from Clairmont Camera to shoot *On Deadly Ground*

Ric Waite's credits as Director of Photography include Cobra, Last Light, Marked For Death, Adventures in Babysitting, Uncommon Valor, 48 Hours and The Longriders. He has worked as D.P. on about 40 features and cable movies.



started out with one of those. But we soon got another from Clairmont; and we shot most of the picture with them.”

“As usual, I got personal attention at Clairmont,” says Mr. Waite. “Denny went out of his way to accommodate me. I have the highest respect for what he’s done for all of us.”

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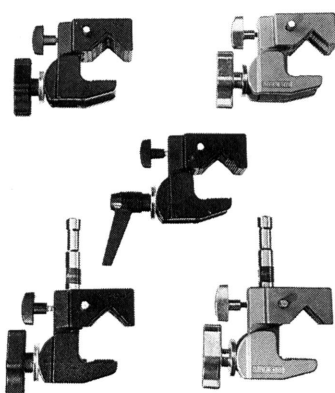
“We rented the Clairmont hard anamorphics (because they’re smaller than the Arriscopes) to use with the Steadicam and for hand-holding. But they were so good I ended up using them several times on the stage, on a dolly,” says Ric Waite.

“The Cooke 36 to 200 anamorphic zooms were also great — superb optics. We

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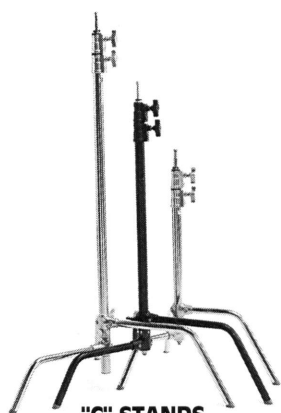
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definition and resolution, as well as richer contrast. Some people might have just tried to use modern lenses with diffusion, but Danny was quite adamant about being as accurate and pure as possible in our reproduction. If we had been able to find the actual set of lenses used on *King Kong*, we would have used them, but that might have been a little fetishistic! At any rate, the lenses we used were a very close match."

In duplicating the lighting style of the original film, Clark used a selection of fresnel lights — mainly 10K, 5K and 2K fresnel spots — to create the harder lighting of the 1930s. Tungsten cone lights (open-faced broad reflector lamps with tungsten bulbs) were used to emulate the soft fill lighting of the *Kong* era. "*King Kong* didn't exactly follow the strictures of motivated source lighting," Clark pointed out. "The continuity of the film's lighting was not that rigorous. I always had a tape of the film on hand as a reference so I could make visual matches of the sequences we were recreating. We used 5294 color stock, because it had an inherently grainier quality than the latest generation of T-grain emulsions. Danny had actually done the animatronic test in London on 5296 with modern, high-quality lenses, and the results made it clear to us that we needed to go with the older lenses; the look was far too clean, and it never would have matched with the original footage. The finished spot is presented as black & white, and it would have been easier to shoot on black & white emulsion, but the blue-screen work required made it a central issue to shoot with color. To try to match the grain of the original film, we force-processed the 94 stock to bring out a little more of the inherent grain. We could have added electronically-induced grain, but it wouldn't have given us the same look."

Klineman added, "*King Kong* is an icon in the public's

mind, and everyone is familiar with the look of the original film. Even in the film itself, the grain structure can be quite different from one shot to the next. The other problem was that with the blue-screen work, we were keying stuff that we had to shoot in color. We couldn't use any heavy filtration, because that would have affected the key. The differences between the modern and old film looks were really quite subtle, and we used every nuance possible to make them match. This all became a factor at Post Logic, where we did the transfer on a Rank Ursa. We were trying to do things you normally wouldn't do to the film, like boosting the grain and definition. We were matching a dupe neg of the original, not a master print, so it had already gone through several generations. It's a tough thing to match, but Curtis managed to get very, very close."

In order to clarify the shooting requirements, Klineman drew up detailed storyboards that broke each shot down to its separate elements. "Those storyboards were actually the most useful and comprehensive I've ever worked with," Clark submitted. "Danny mapped everything out very carefully so we could see, step by step, the various component elements needed to create each complete shot. What we shot was a combination of original elements and new elements, and everything you see in the finished spot was actually designed on the storyboards."

The shot in which the woman slams the window on Kong's foot, for example, required four separate elements: the interior apartment wall from the original film; a new window frame that the woman could close; the ape's prop foot; and a background element from the film. In order to combine the various elements into a seamless whole, the filmmakers took full advantage of the compositing options offered by the Quantel Henry. An empty shot of the

apartment was needed, but Klineman ran into a problem when he discovered that there was always someone in the room in the original film. Upon further examination of the *Kong* footage, however, he saw that each area of the room was empty at different points in the sequence. "We just took those areas and put them together to create an 'empty shot,'" he revealed. "Our Quantel Henry operator, Tim Webber, then camouflaged the demarcation points so they wouldn't be visible."

The Henry proved its value once again on a subsequent shot of Kong spotting the Bunny after coming into view over a rooftop ledge. The scene involved three elements: the Energizer Bunny, shot on a large set; King Kong's head, shot against blue screen along with a scale model of the large set; and a background skyline shot from the original film. "The blue-screen scale model was built so that the angles and the width of the wall Kong puts his hand over would be the same as on the large set," Klineman notes. "We had to be able to take any shadows Kong cast across this smaller set and put them on the large set as well. We shot the Bunny stuff first so we could position Kong correctly and get his eyeline just right. Then we took the shadows that Kong cast and worked them out on the Henry; we were able to mix the shadows back into the part of the picture that we wanted. This also involved some frame-by-frame matting and rotoscoping around the Bunny to make sure the shadows didn't pass in front of him."

Assessing the merits of the Henry, Klineman said that the machine's real advantage is that it allows the user to process several effects simultaneously, rather than one at a time. "It's much faster, but that's not the only boon," he pointed out. "With the [earlier] Quantel Harry, if you'd done five or six processes and the first one wasn't

quite right, you had to go back to the beginning and start over. This one processes all of those things at the same time, so you can read-just instantly." In layman's terms, this convenience is roughly equivalent to the difference between cassette tapes and compact discs; instead of rewinding to a song, one can now simply access any track at random.

Adding his own enthusiastic endorsement of the Henry, Clark said that Klineman's working knowledge of the tool affected the overall design of the commercial. "This was my first experience with Henry, and it's just remarkable how the manipulation process works. What's exciting is that in this instance, this technology was used as a design tool rather than just a way to fix a problem. Because Danny understands how this technology works, he was able to work it into the concept of the shoot. I'm sure the designers of the Henry wanted it to be used in the way we did. All too frequently, the term 'fix it in post' is how people view this process."

The Henry work on the shoot took a total of just eight days. The completed commercial, which began airing in December, is a testament to both the filmmakers' perfectionism and their ability to smoothly blend old and new techniques. Summing up the project, Klineman predicted that all filmed optical work will eventually be done electronically. "The resolution is going to get to a state where you'll be able to transfer from film to a digital system and then back to film again with absolutely no loss of quality. You'll also be able to see what you're doing as it's happening rather than sending it off somewhere and getting it back two weeks later. The creative opportunities afforded by these new technologies are going to have a significant impact on the way commercials and feature films are made."

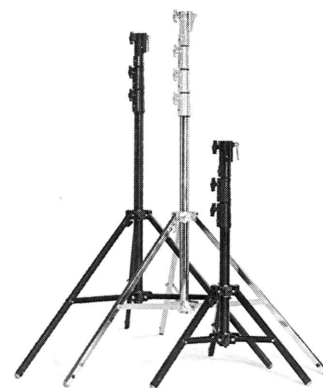


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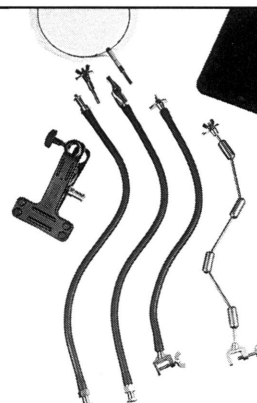
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HDTV Standards Discussion

In late September, a group of concerned members of the motion picture production community met at the ASC Clubhouse for a discussion of the current deliberations on a high-definition television standard. The consensus was that the expertise and experience of the production community were not being given adequate consideration in the standards debate. Present were ASC members Stephen Burum, Allen Daviau, John Hora and Steven Poster, and associate member Rob Hummel.

The conversation led to a letter stating the position of the ASC on the matter, which was printed in the December 1993 issue and released to the public. What follows are excerpts from the conversation.

Aspect Ratio

Daviau: We are here approaching the 40th anniversary, which was December 11, 1953, of the FCC announcing the NTSC color television system. Meetings with authorized representatives of the FCC were going on at this time 40 years ago that delivered us NTSC, and what have we been whimpering over the last decade? Let's not make the same mistakes again.

Hummel: Pioneer's offering some strange aspect ratio.

Hora: 16 x 10.7.

Poster: What?

Hummel: 16 X 10.7, instead of 16 X 9.

Hora: It's the difference between 1.33 and 1.77, somewhere in between. So the letterbox, you don't see quite as much, and they can stretch a little bit.

They have a system where it's even in the center and then it stretches the last 10 percent of the picture, anamorphosed out to fill it.

Hummel: Well, the ProScan 16 X 9 does that, too; it takes a normal 1.33 television show, and it stretches it all over.

Hora: This only stretches the edges.

Hummel: Oh, that's so much better! (Laughter)

Hora: So I guess a circle sort of looks normal in the center, except out at the edges it has bumps!

Daviau: One of the jokes is that [when] the original NTSC [was designed] in 1941, they truly defined the aspect ratio, and that's why we have all these problems about blanking and everything else. They defined the aspect ratio, what had to be filled with picture information exactly, as well as lines and frames. They didn't want anyone doing any more experimental television systems. This of course has nothing to do with true high-definition, and it's part of this "Let's rook the American public out of one more television set before there's a standard" attitude.

Hummel: What I want to address is that I discovered that this whole Grand Alliance thing was going on. Originally it was announced that it was going to be a progressive scan American standard TV set, but lo and behold, it was not a fait accompli: there were heavy pressures from the hardware industries and broadcasters convincing the Grand Alliance

to stay with interlace.

NHK's research, which I have a copy of (published in 1978), showed that when they were going to make HDTV, they realized that progressive scan would be the best-looking HDTV set. Because if you have a 1000-line progressive scan set next to a 1000-line interlace set, the interlace set

I looked at the letterboxed laserdisk of *Three Days of the Condor*, and the main title was still cropped enough that it read "hree Days of the Condo."

only has 60 percent of the resolution of the progressive set with an equal number of lines. NHK decided, though, in the '70s, that the technology didn't exist to be able to have the bandwidth or the amplifiers to support a progressive scan display. They decided that, well, everyone's gotten along with interlace this long, we'll continue. Interlace is basically a very old compression medium — it's a way of getting the image by just doing one half of the display, and then the next half of the display.

Daviau: R.C. Ballard, The Camden Group, 1933. (Laughter)

Hummel: The original impetus behind HDTV was purely to display entertainment images. Obviously, the other agenda was coming up with a way to sell more hardware. Because there's no way the American

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public or [viewers] around the world [are] complaining that their TV sets are low-resolution. They rent VHS tapes, which are half the resolution of broadcast right now.

Regarding the aspect ratio: no one's quite sure where 16 X 9 came from. Originally the Japanese proposed the 1.66 standard, and I've heard that they proposed 16 X 9 because it was halfway between 1.85 and 1.66, which is no reason at all.

Burum: I read a horrendous article about two years ago that gives the whole rationale for why this 16 X 9 situation exists. You just read this thing, and it's the worst tap dance, the dumbest logic you've ever heard.

Poster: What were the premises?

Burum: I can't exactly remember, it was very convoluted, but basically, the idea was that if you use this, you wouldn't have to manipulate everything quite so much as you do now. Everything would still have to be manipulated, but you'd get a little bit more. That's just about what the whole article was about.

Poster: It was explained to me in Japan by NHK's engineers and also by Farouda and a couple of other people — so you have different camps — that 16 X 9 was a simple multiplication, the square of 3 X 4, and it was an easy way electronically to increase the size of the image. It had nothing to do with aesthetics.

Hummel: Then you'll hear people saying it's halfway between 1.85 and 1.66, so all the engineering folks thought it would be ideal.

Daviau: Our beloved SMPTE high-definition committee — and I'm talking about eight

years ago — changed it from 1.66:1, which is what the Japanese had, and they did it on the basis of electronic house-keeping.

Hora: The logic would be to make it halfway between 2.4 or 2.35 and 1.33, so there's actually no logic in saying it's between those two particular locations.

Hummel: To me, if you have a common horizontal and a common vertical line, then you come up with the widest aspect ratio and mask in the sides the way normal motion picture theaters do; that way, your narrowest aspect ratio is displayed as big as it can be, and your widest aspect ratio is displayed as big as it can be. Under this way, the wider the aspect ratio, the smaller the picture gets.

Poster: Let me digress a little bit. Let me ask something: 1.85 was a designed standard by SMPTE, I believe?

Daviau: It started at Universal.

Poster: Was it arbitrarily done as 16 X 9 was, or was there any artistic consideration?

Burum: They figured out that that was the most they could crop it and blow it up without it looking terrible.

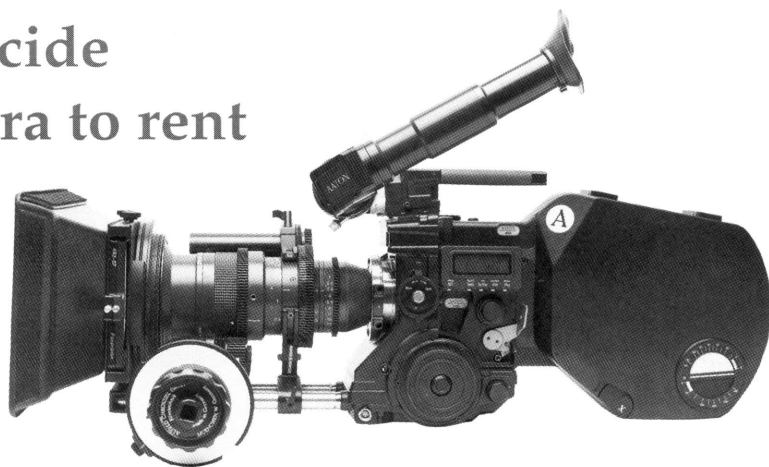
Hora: And they still chopped off the heads, feet and titles. They also had a big inventory of unreleased 1:33 films.

Poster: So there was no artistic consideration? I've heard all sorts of stories about how it was designed artistically.

Hummel: What I've heard from a number of sources is that it was one studio. All the other studios were paying the rental fees of the CinemaScope lenses from Fox. This other studio said, "Just mask off the top

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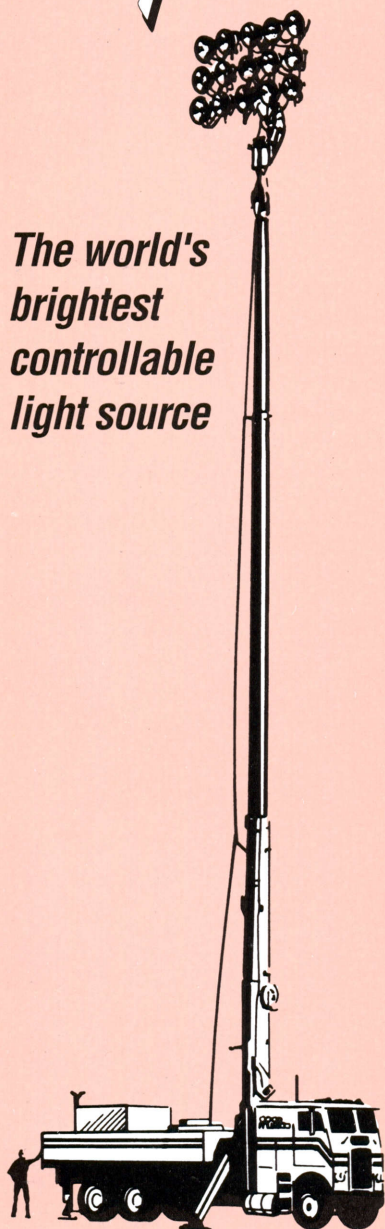
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and bottom, and here's your wide screen."

Burum: The only honest people when all of that was going on [were those at] Paramount. They said, "We've got a better system, which is VistaVision. We're going to go with the better system." The whole idea was to give people what they called "high fidelity motion pictures." They even said if you blew it down, it would be a sharper picture, which it was. And they're the only people who really looked at the situation, and tried honestly to make it better.

Poster: So has any format that we know of ever been designed along with the concept of say, Golden Section, or . . .

Daviau: Theoretically, VistaVision was just a double-frame 35.

Hora: They recommend 1.85 or 1.66, their original standard.

Hummel: The actual frame of VistaVision is like a 1.47 or 1.5. When you put on a soundtrack, it's like a 1.47. But it is true, some of the original brochures for VistaVision recommended 1.85 or 1.66.

Poster: Is there an aspect ratio that we want? Is there something that would satisfy us to work with?

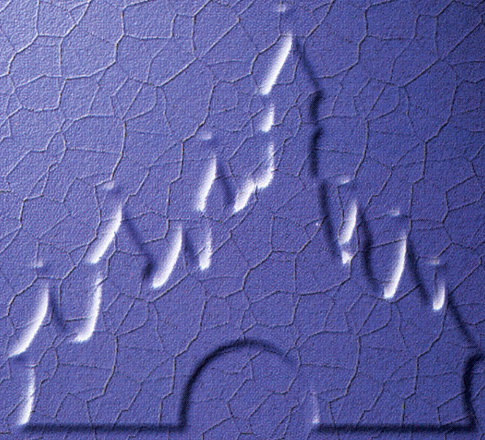
Hummel: To me, if you go to the National Gallery, look at the number of aspect ratios that are contained in a museum like that. The absolute ideal is that you be able to create your film in any aspect ratio that you want. That obviously is not the real world. But as far as an aspect ratio that you want for your TV set, you probably want it to display — for me, I'd want the widest aspect ratio set. But maybe part of this thing about the digital archi-

itecture is that we, as the ASC, could throw our support by saying we want a standard ensuring that the images are displayed properly and if there is a wider design set, that the digital architecture is smart enough to display the image and fill that wider set.

Daviau: Let me just say that I have seen 16 X 9 Sony 1125 pictures transferring a Scope 2.35, 2.40 picture letterboxed inside a 16 X 9, 34-inch diagonal screen. It's a lot better than we're used to getting. I mean,

We're saying very simply, "Hey guys, 45 years ago, [they] knew exactly how to handle this. . . They kept the common top and bottom line, and they moved the masking in and out. . . [It] works very well.

it's a helluva lot better than a 2.40 ratio inside a 1.33 NTSC picture. Is it as good as it can be? Of course not, but the problem I think you're going to run into is the tube manufacturing juggernaut. In the U.S., it's going to be worse than in Europe because there won't be anything broadcasting at that standard for some time, unless they talk the cable service into doing it. Literally, the only programming that'll be 16 X 9 NTSC will be on special laserdiscs. People are going to buy these television sets and get really ticked off. But



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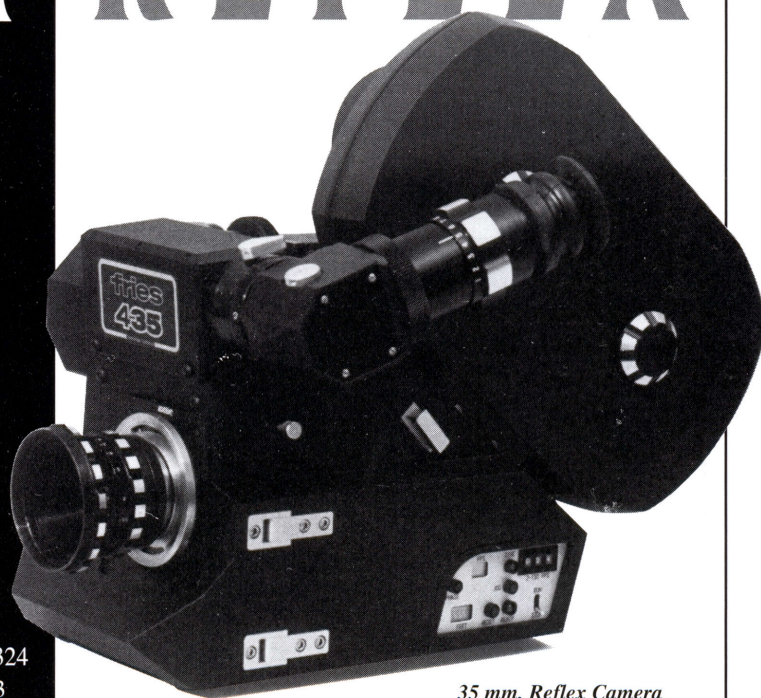
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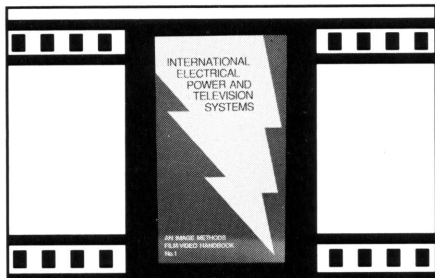
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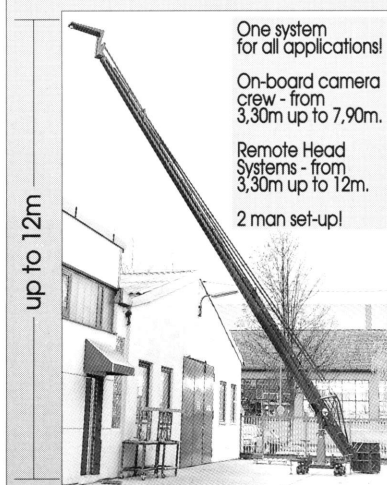


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inside of that aspect ratio, they could do Scope pictures.

Poster: I dealt with 16 X 9 — in shooting original on 16 X 9 — I found it a very unpleasing aspect ratio. Is there something along the lines of 2:1 or something that we could recommend?

Burum: 1.85:1 is really hard to compose in.

Hora: There's no way to get round pegs into square holes without shaving something somewhere. The answer is, if it is technically possible, and it certainly is, the aspect ratio should vary to match the material. Despite the fact that Hollywood doesn't have every ratio in the world, there is a selection of aspect ratios. 2.2, 2.4, used to be 2.55, there is 2.75 or 8. Specifically, every visual art form, whether it be a printed page, a painting, or a quilt, is designed with some freedom in terms of the shape. Only television broadcasts are flocked into this rigid shape. Even [with] motion pictures in the silent days, there were changes.

Poster: There are aesthetically pleasing rectangles, however. In traditional Chinese and Greek design theory, their theory is the "Golden Division" or the "Golden Section."

Hummel: I think people get hung up with images — the Golden Mean or whatever, rectangles, for displaying a still image. Why does that necessarily mean that that pleasing rectangle is the best way to tell a motion picture story? I set up a policy at Disney a few years ago that we re-release the 1.33 films masked within the 1.85 area, so that they are projected properly around the country in normal theaters, and realized how flexible film is that way. If you want to blow up

your 1.85 film to 70mm, you can mask it in, and then display it properly. Francis Coppola did *One From the Heart* in 1.33 back in '79 or '80, and yet he went ahead and they released just contact full-aperture prints — but you know that it was cropped off and shown in 1.85 theaters.

If Sony wants to sell just 16 X 9 sets, so be it. But header descriptors are only available with a progressive scan digital architecture, not interlace. When the signal comes into the set, the set knows, "This is 16 X 9, I'm going to letterbox it this way." With header descriptors, you can also have Proscan or some elite model of TV set that they're going to sell to a higher end. If Mitsubishi decides that they're going to market a 2.40:1 set, if they feel that their marketing says they can get away with it, the distributor will say, "Hey, I don't even have to letterbox it on this set. I'll fill the whole screen!" Because with digital it doesn't have to be locked into a fixed line rate. It's just a matter of having all the information there and having it interpreted by the set as it comes in.

Burum: Let's figure out exactly what we prefer. We know we prefer progressive scan, we know that we prefer open architecture. I think that if you get into an argument about which is the most artistically pleasing rectangle, you're going to get lost in a terrible miasma. I think it's better again to take the higher ground and say, "Look, [this is] the history of motion pictures we have in our hot little hands, we want this protected, we want this not trashed, this is a gift to everybody and we want the ratio that preserves the things the way the film artists intended them to be seen originally." It may be a great movie, it may be a terrible movie, it may be of great artistic interest, it may

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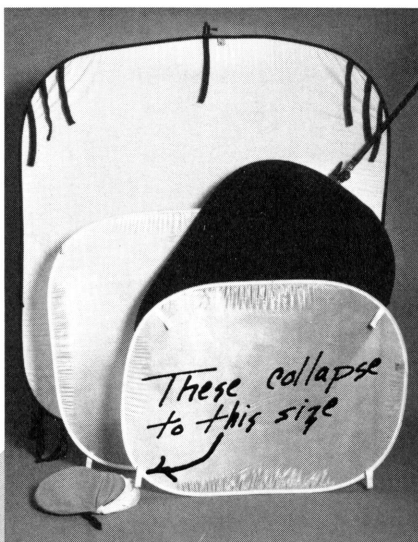
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be of no artistic interest, it may be something very nostalgic to a little old couple in Small Town, Idaho, or not, but these people in the audience have a right to see [it] the way the artist wanted it to be presented.

We're saying very simply, "Hey guys, 45 years ago, the motion picture industry knew exactly how to handle this. What did they do? They kept the common top and bottom line, and they moved the masking in and out. It's been very satisfactory and works very well, and it can accommodate every one of these things."

The thing that they don't say with 16 X 9 is that not only are they going to trash all the movies, and not present them the way they were intended, they're also going to trash all the 1.33:1 television. And how much has been produced of that stuff? All the *I Love Lucys*, cropped. The Fred Astaire specials, cropped.

Progressive vs. Interlace

Hummel: The argument by the hardware manufacturers, and by some broadcasters, says that there aren't any progressive scan chips available for HDTV cameras, so the only way we can get HDTV to the consumer faster is to go with interlace. They say it will be a two-year delay if we go with progressive. Well, obviously, that's hogwash. Who cares if we wait two years, who cares if we wait another five years?

No one is watching TV in Sioux Falls, South Dakota, saying "Helen, I can't watch this anymore, it's so low-res!" We might as well wait and do it properly. Yet the truth is, Fox has built a telecine from scratch that's being used to restore the Fox Movietone library, with a 1000-line progressive scan chip. The last time it was used, it was a

couple hundred miles above the planet, looking down at the surface. It was in a spy satellite, and the only reason the 1000-line progressive scan chip is available is because they have even higher resolution progressive scan chips in satellites right now. They're made by a little company with a lot of yellow boxes in Rochester. That's how that little company is able to make the Cineon system, because they have this technology to make these real high-resolution imaging devices.

Hora: If the digital image, the file, the frame in a digital format is anything — it can be interlace or not — the display can be anything it wants. If they can only make tubes and circuits in a set now that handles interlace, that's fine. But progressive scan information coming to the set and being converted to interlace. . .

Hummel: This is part of the thing. You can easily take progressive imagery and adapt it to interlace. It's very simple — black box, hook it up to your set.

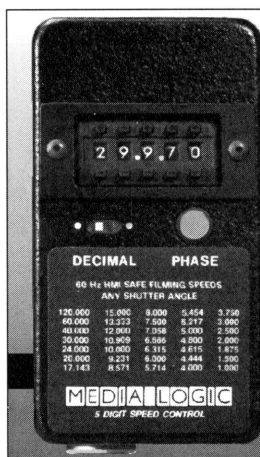
Poster: We do it now.

Hummel: It's very difficult to take interlace information and adapt it onto a progressive set.

Hora: Every film-to-video transfer is transferring progressive to interlace.

Poster: But we also do it with CGI. When you create a computer graphics image, it is done in progressive, and it is transferred to interlace. It's done in a lot of different venues.

Hummel: It's clearly the high ground. Progressive is the way to go. But where it goes further, as in my discussions with people at the MIT Media Lab,



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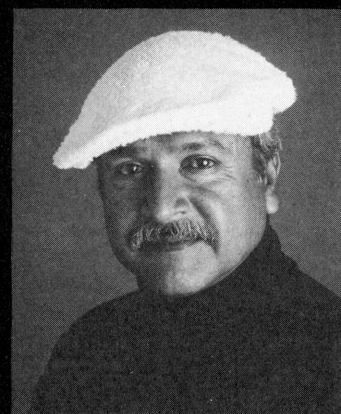
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John A. Alonzo, ASC, earned an Oscar nomination for "Chinatown" and some of his many motion picture credits include: "Housesitter", "Internal Affairs", "Steel Magnolias", "Navy Seals", "The Guardian", "Scarface", "Norma Rae", "The Bad News Bears", "Black Sunday" and "Farewell My Lovely".

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I was pointing out issues [about] how these hardware manufacturers right now — Sony, JVC, Phillips, Matsushita — have recently said that they're going to come out with movies on compact disc at about 70-80 percent the quality of VHS, lower than VHS resolution. They say they've done tests that find that the public doesn't object to the image quality as long as they have high fidelity sound going along with it. (These same people are saying we must go ahead with interlace because the public is demanding HDTV.)

My point is, high def will be great for us, it will make our pictures look that much sexier and look wonderful, but the truth is, that's not the driving force. It isn't entertainment images anymore. The only reason to advance a high-definition display standard is to bring on the television set of the future that will be displaying high-resolution text and graphics *and* entertainment imagery.

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Poster: There's something else that's necessary along with that, and that's open architecture TV, which means that you can plug in any ratio.

Daviau: As part of the Grand Alliance thing, they use the buzzword 'open architecture,' I do believe. 787.5, 16 X 9 is a start, that's what they like to say.

Poster: But there is a big move on between a Japanese manufacturer and Microsoft to design a top-of-the-TV box to defeat the idea of 'open architecture' so that it can be a one-standard system. What we need is a bottom-of-the-TV box that can convert any of the progressive standards we want into anything else. That's very easy to do. It's done on computers all the time.

Hummel: With interlace, your frame rate is fixed. You've got no choice. At 60, it's a 3:2 pulldown with that 24. With progressive, very easily, the box says, "Oh, I'm receiving a 24-frame image. I'm going to double it or treble it on my monitor," so now it's going to be showed at 72 display frames per second to eliminate any perceptible flicker, and it

No one is watching TV in Sioux Falls, South Dakota, saying "Helen, I can't watch this anymore, it's so low-res!"

will look just like a motion picture. If you want to shoot sports, shoot at 60 frames per second, high-definition TV, and that signal will come in, and the box will say, "Oh, that's a 60-frame image, I'll display this at 60 frames per second." Or if you want to shoot a 30-frames-per-second film, fine, the box will recognize this as 30, and play it at 60 so the image won't flicker.

It's such a home run, it's so simple on this issue, yet the politics are amazing. Howard Miller of PBS, who testified just before me, said that PBS produces more entertainment than anyone else in the world each year and PBS needs to have interlace cameras to record these images. And then I got up there, and I said, "I don't know what he's talking about. I come from a community called Hollywood, and we produce more in one year than PBS has in their entire history, and it's on 24-frames-per-second 35mm motion picture film, which we'll be down-converting to high-definition TV,



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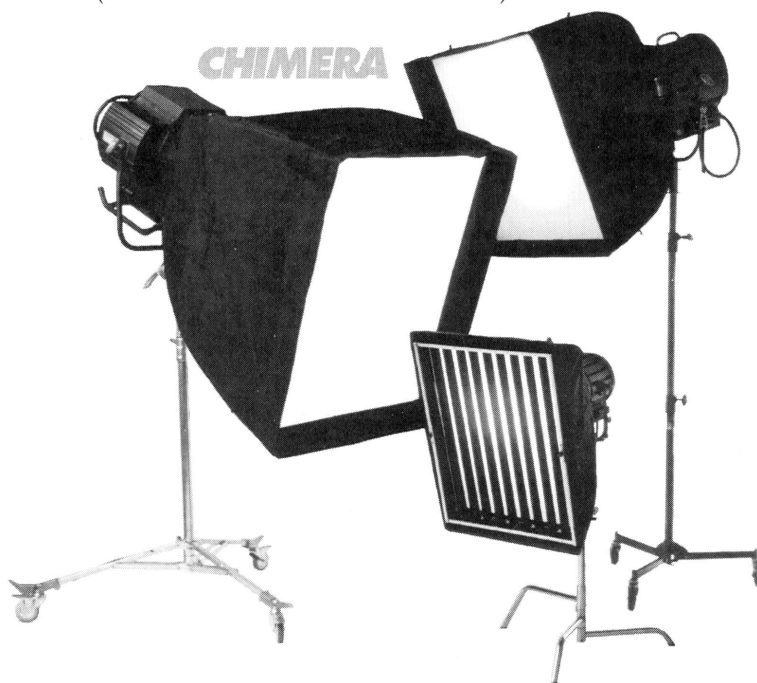
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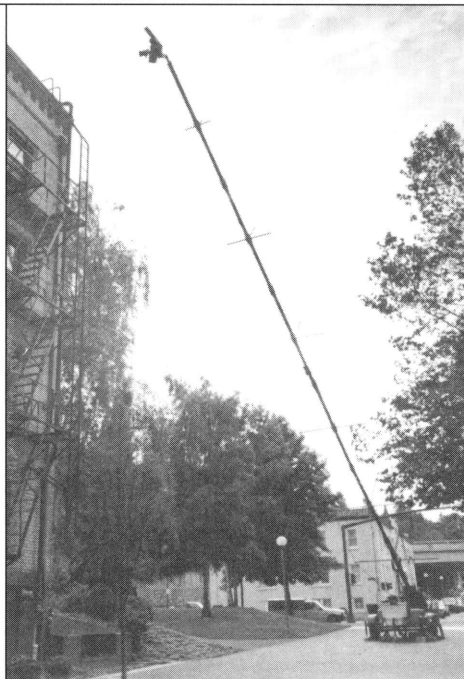
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but it will still exceed the resolution for many years to come."

Poster: About four years ago at the consumer electronics show in Chicago, I was made privy to a private memo that said, "We need high-definition now because the market is flat, and we want to sell more TVs." And that is their agenda. It's very simple. The more standard changes they can make — if they make one now, they'll make one in ten years — the more TVs they can sell.

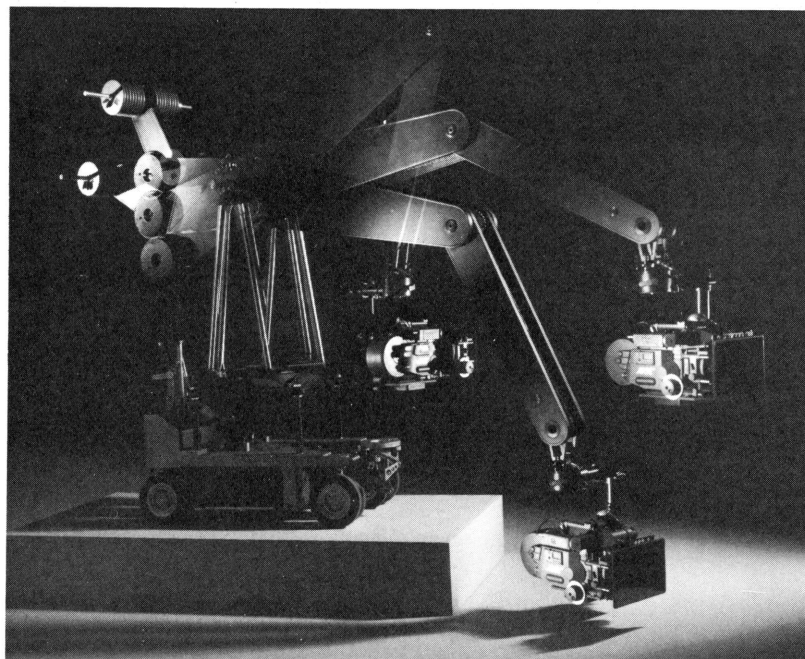
Hummel: The thing about progressive vs. interlace is that when you lock into an interlace standard, you're locked. The way I understand it, to translate that, and if you decide you want to increase the resolution, it'll be much too complicated to interpolate the information. You can see it right now. I can take my Mac and plug it into a 700-line display, and I can walk over and plug it into a 2000-line display, and it looks fine. It's progressive.

Poster: Each monitor can display multiple standards, too.

Daviau: I'm concerned with the standard on which they're going to base the live cameras and the telecine. The first batch better be at least 1000 lines, and we cannot let them do this. It's easy for them. You know what it is. It's AT&T, and also from what I understand the Microsoft people as well, saying, "We don't worry as much about the resolution per se as long as we get the progressive."

Hummel: Part of the reasoning for 787 is that they know they can do that now. The 1000-line we'll have to wait for. Part of the reason — and this is the other agenda — that some people want interlace and

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other people want 787 is that these people have spent fortunes on this HD research. And they want to get faster return. They want to tell the boards of their corporations that they can get returns. The faster they get it out to the public the sooner they'll get the money back. I can respect that opinion — that's business. But I think it will damage the consumer if they come out too soon. It's like adopting the color standard in NTSC forty years ago, [which] locked us into this dreadful standard . . .

Daviau: So that we could have peace between General Sarnoff and Mr. Paley, which is what it was.

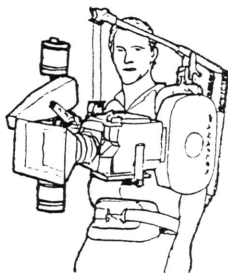
Hummel: With this standard, you'll have color that's digital, and it will come into your set and will know how to tune itself and display correctly, instead of people futzing with their tint knobs . . .

Daviau: I hate tint knobs . . .

(Laughter)

Hora: I think another important thing to consider is that this system is for ten years. It's the NHK Sony system. That's what's so crazy. If they last as long as NTSC, which was outdated by the end of the war in 1946, if they can expect any system now to exist to 2050, if they're going to expect a half-century of life out of it, we had better go for a high standard, as they did with NTSC. They went for a standard originally that they couldn't really equal. They barely had it working at 525 lines, and it got better and better. If you remember TV pictures from '52 or even the color I saw last night on this Nixon thing from the early '70s, it is so primitive to what's been realized today, and all within NTSC, because they were able to grow within the

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standard that allowed it. The thing now is to reach for a very high standard regardless of what you can manufacture today.

Poster: An interesting comparison that I recently saw was Michael Apted's *28-Up*, in which you see 28 years of emulsion technology changing over that period of time. As we know, film is a moving target — it keeps getting better as well. It was astounding to see the differences in the period, and you do the same thing with television. If you take television that was done, if there's any left other than bad Kinescopes. . .

Hummel: In June '92 CBS aired a special on Watergate. They went and got the master tapes from PBS. The stuff on the street chasing Ehrlichman and Haldeman, which is 16mm, actually looked OK, because the negative was still OK and there was reversal film too. It held up and the color was good. But the hearings from the master tapes looked like sixth-generation VHS. They were streaking and they were just fuzzy images. You remember watching those hearings. They weren't ugly at the time through our TV sets, but magnetic oxide sitting on the shelf is subject to degradation.

Daviau: Certain things survive. The Fred Astaire restoration from '58 was not as horrible as you would expect, but look at the stuff from the *Ed Sullivan Show* laserdisc. Some of that color is extraordinary, I mean again it has to do with the variances of how the stuff was stored. But anyway, to return the point, you're trashing all those years of NTSC.

Hummel: That's the thing we represent. The Hollywood industry of motion picture film is the largest library of entertainment. The filmed enter-

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tainment community, which is all these varying aspect ratios, is the largest library of entertainment material there is today.

Burum: We want everyone — historians, fans, techno-nerds, whatever they are — to have it the way it was intended for them to see it originally. All these other things we talked

[If] they're going to expect a half-century of life out of it, we had better go for a high standard, as they did with NTSC.

about are support to that idea, because what people are going to try to do is nip around the edges about the technology.

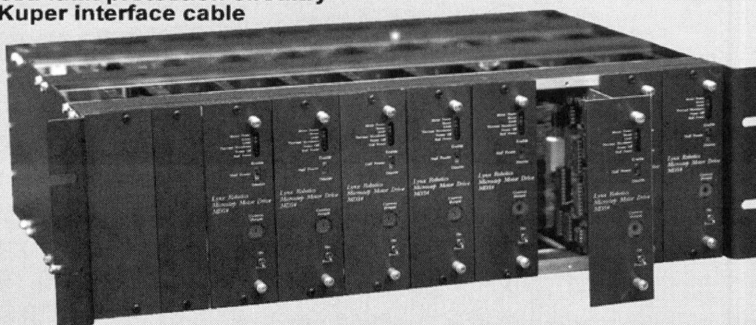
Burum: Anybody who is in this hardware game is going so fast and so furiously and trying to get to a level where it's really superior, that it is bankrupting people.

Hummel: What I'm constantly addressing is: Don't get caught up in techno-lust. We're seduced into thinking we want to see electronic. The attitude is that it must be the best way. Film isn't old technology, it's mature technology. It's the only universal, worldwide standard. I can take it to some back-alley cinema in Bangkok and project and hear it.

People are talking now about electronic cinema and how it's the future. It became clear to me about a year ago when my family and I were driving through Cortez, New Mexico. There's a local theater

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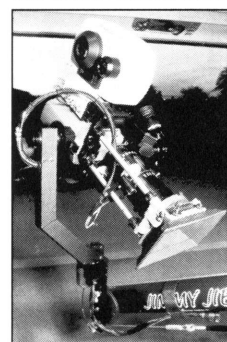
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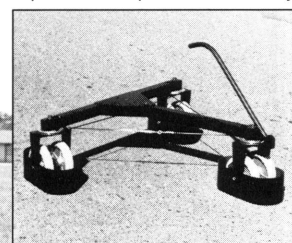
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there, and when that projector goes down, they can find the local handyman and get it up and running again. If you have something electronic that's technologically sophisticated enough to approach the image quality of film, and that thing goes down, you are *down*. They're going to be down until the guy from GE or Hughes can fly out and fix it.

Poster: How do you formulate this and how do we reach a statement?

Hora: Isn't it true that the standard that's been suggested doesn't really solve any of these questions, such as getting the aspect ratios of film to fit into 16 X 9? Everything is being compromised.

Daviau: Will these people on the committee say, "Are the cinematographers holding out for 2.55?" Will they ridicule us?

Hora: Can we ask for the file descriptor, and a file that has the entire image, and specified in a way that allows the correct presentation of that, whether or not the equipment to receive it is available? So you might have a 16 X 9 set that either lops the ends off or fits it in with letterboxing. But the whole image is there for the next set that comes out, which has the capability. The thing is to not lose any of the picture.

Hummel: Upwardly compatible.

Daviau: Something which must be stressed is that we want to develop a system with which we can start laying down these treasured films, at least a system whereby we will not be retransferring in a few years. These elements are already beat up as it is.

Hora: The right way is for the image to be preserved in the format it's meant to be seen in,

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and nobody is editing it by clipping it, nobody is modifying it in such way that you can't go back and see that transfer later and see the whole image. What happens now is that when we buy a laserdisc, the ends of the picture are missing, or black bars are there and resolution is missing because you only

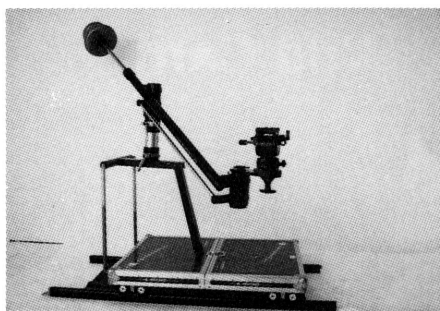
Film isn't old technology — it's mature technology.

have 250 lines left. You're always sacrificing some of that original image, because somebody is making a decision. I've never seen a letterboxed laserdisc that I wouldn't have done differently.

Hummel: They're all done differently, never consistently [in] the correct aspect ratio. I looked at the letterboxed laserdisc of *Three Days of the Condor*, and the main title was still cropped enough that it read "hree Days of the Condo."

Hora: The thing is that somebody is making these decisions, and it's probably not the cinematographer who shot it. If the file contained the original complete image and the description of how it is supposed to be displayed, then we'll have a standard that for fifty years [will allow us to] keep making better and better sets, and gain from the image. Otherwise, we have all the strange stuff we have now, all these compromises.

Burum: A very false impression is often gained about these old films. If you've ever seen an original nitrate print of a silent movie, you look at those things, and say, "My God, this is phenomenal. Look what these people were doing!"



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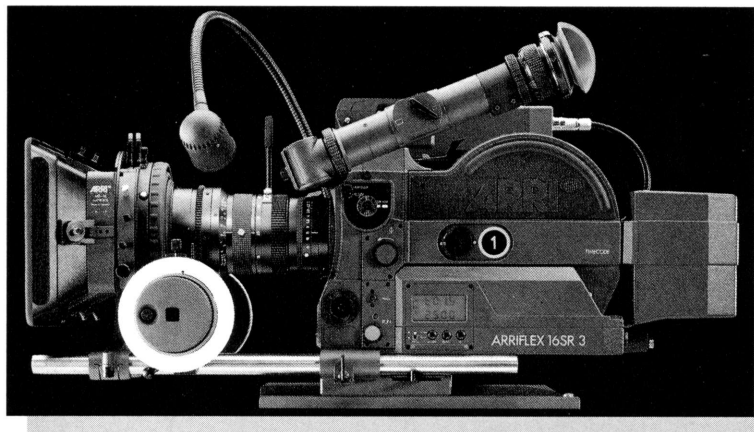
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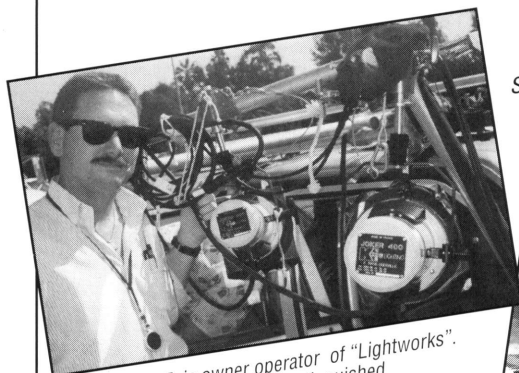
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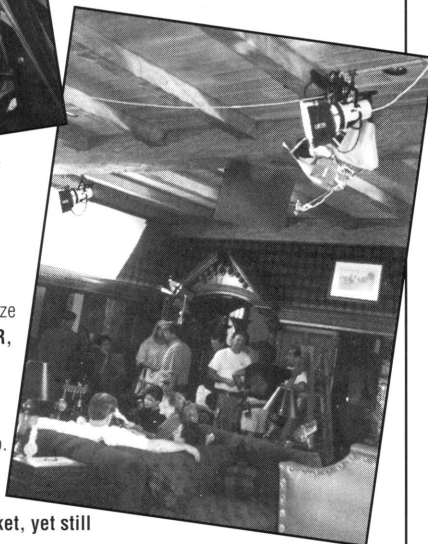
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FROM RTS

The following letter was drafted and released to the press and public as a result of the discussion excerpted above:

To Whom It May Concern:

The American Society of Cinematographers has decided to publicly state its opposition to the direction being chosen for a United States transmission standard for HDTV. The ASC represents the artistic members of the Hollywood production community charged with capturing the visual aspect of the stories we tell, those best qualified to ensure that the integrity of these images is maintained.

Incorporating interlace scanning or a 16x9 aspect ratio in a transmission standard would be an avoidable artistic and financial mistake. Also, it is inconceivable that a so-called "interim" standard is even being considered when so much is at stake for the industry and the consumer.

Heretofore, Hollywood and the worldwide film production community have been excluded from the discussions leading to an HDTV standard, in spite of the fact that the Hollywood studios and production community maintain the largest library of motion picture and television images in the world. It is our concern that these images are presented in a manner which preserves the original intent of the filmmakers. The format of advanced television that is adopted should have the flexibility to present images in a manner that most closely matches their original presentation.

The problems of displaying fine detail on interlace displays are well known. Unintentional moiré patterns can distract from the telling of a story. More significant is the necessity of locking in a specific frame rate for an interlace display. A fixed, specific frame rate for display means that images not shot in that frame rate must be compromised slightly in order to be adapted to the interlace display.

The advantage of a progressive scan architecture is its ability to display in whatever

frame rate is appropriate to the material being displayed. Using Header/Descriptors, the television display can be intelligent enough to interpret the correct frame rate for any given material. Motion Pictures photographed at 24fps can be displayed at 48 or 72 scans per second; those shot at other frame rates can also be displayed at their correct display rates without complex adaptations of the frame rate as required by a fixed 60HZ display.

Header/Descriptors will also enable formatting information to be carried with transmitted images. This would allow a subject to be displayed on a set in its correct original aspect ratio, if desired by the filmmaker. Since the current aspect ratio chosen for HDTV does not match any previously used format, all films will have to be adapted to fit within the confines of 16x9, often losing information in the process.

It is curious that while the only true existing library of widescreen material is available from the motion picture community, the chosen HDTV aspect ratio has no relation to any previously photographed format. There have never been any films composed for an aspect ratio of 16x9 (1.78:1).

It is clear that an interlace display standard will require compromises in how motion picture images will be displayed. A progressive standard, on the other hand, lends itself to flexibility, and can adapt to display images much closer to the way they were originally intended to be displayed.

With these facts in mind, the American Society of Cinematographers formally places its support behind a system of High Definition Television that displays images with a progressively scanned display. To adopt an interlace-based system, intermediate or otherwise, would be to adopt a lower quality display medium and most likely anchor a United States standard in old technology.

Yours truly,

Victor J. Kemper, ASC
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compiled by Marji Rhea

Eastman Introduces High-Speed, Low-Grain EXR Film

Eastman Kodak Company has added to its EXR film system with a new high-speed, color negative, introduced at the January ShowBiz Expo East conference in Manhattan.

According to Henri Petit, vice-president and general manager, Kodak Motion Picture and Television Imaging, "This new 500T film provides the widest exposure latitude in the most critical lighting conditions, offering cinematographers a new dimension in creative range. In addition, the film delivers rich black shadows and clean white highlights with crisp, accurate colors throughout its range. It intercuts with other EXR films, and excels in telecine transfers."

Eastman EXR 5298/7298 color negative film is balanced for an exposure index of 500 in 3200-degree Kelvin tungsten light and 3400K tungsten photoflood light in both 16mm (7298) and 35mm (5298) formats. Petit says the color reproduction and tone scale compare favorably to the company's popular 200T EXR 5293/7293 film.

Kodak scientists and film architects designed the new film in response to suggestions by cinematographers and visual effects specialists. While the film was being developed, many cinematographers provided feedback which was integrated into the final design.

"This film produces crisp, clean telecine transfers, which reflect slight shades of difference in colors and contrast," Petit says. "It holds subtle details in the shadows and highlights. What you get on tape during telecine transfer comes a lot closer to the images captured on film."

Observations by cinematographers who have tested the new film and compared it to other high-speed emul-

sions include the following comments from John Alonzo, ASC and Michael Watkins, ASC:

"If I got caught in a situation, I could rate it at 1000 and print down," says Alonzo. "I think it is faster than 5296. The color is very true. I like vivid colors because I can always deteriorate (the image) if I want. The grain structure is much better. I like the details and the crispness. You can't overexpose this film. The blacks are blacker, and there are more details in the shadows. There is a little more texture on the back wall."

Says Watkins, "I can't wait to see this at the magic hour with sunsets. This (film) will be sensational at night. You are going to pick up the nuances of colors. There is a much richer color interpretation including flesh tones. There is greater color saturation, and the more information on the negative, the better. The blacks are richer, and it handles overexposure much better than 5296. This gives you the freedom to be a little bolder in available light. This (film) gives you a bigger spectrum of light to work with."

Petit adds, "This is also the best high-speed film ever made for blue-screen photography. It is ideal for photographing miniatures and other blue-screen picture elements. There are both creative and cost benefits. It provides the depth of field needed to create an illusion of reality without the elaborate lighting setups required for slower films. In addition, it separates cleanly from blue-screen backgrounds, so there are no color fringing problems with mattes."

Petit stresses that the new film will augment rather than replace existing EXR and other Eastman film products. He says that Kodak will continue marketing its other high-speed films as long as there is a sufficient demand.

"The artistic expectations of

contemporary cinematographers are higher than ever, and they are often expected to work in challenging lighting environments, with tight deadlines and severe budget restrictions," he says. "There are many variables, so the more tools we provide, the more creative latitude there is."

The first Eastman EXR film products were introduced in late 1989. They included a 50-speed daylight-balanced film and a 500-speed tungsten-balanced film. The new family of EXR films was based on advances in Kodak's patented T-grain emulsion technology, color coupler and other chemistry, and computer-aided design.

"5298 has surface maximized T-grain technology that makes it the fastest high-speed motion picture film in the world today," Petit says. "We promised that during the 1990s, we would continue to refine the use of this amazing breakthrough in emulsion technology. Subsequently, we have added 100- and 200-speed tungsten-balanced films, and intermediate and print films to the family of EXR products."

Mitchell Camera Motor

The Rotavision Mitchell Super Motor is a multi-featured DC servo crystal locked positioning motor drive and remote control package to suit every model of 35mm Mitchell motion picture camera. General features include motion-control interface to any system; digital displays for speed, footage, frames, interval, burst and exposure time; forward/reverse at all speeds; magazine take-up torque control when used with Rotavision magazine motor; slave function (to and from other equipment); strobe lighting trigger; park function with LED indication; rewind function for multiple exposures; supply voltage readout, warning and shutdown; overload protection; polarity protection; camera buckle



switch shutdown; mechanical inching knob; jog function; and footage display and reset. Motor weight is 4 kg.

Live-action features include 1 fps to 120 fps crystal speeds at .001 increments; synchronous speeds of 24, 25, 30, 50 fps; all speeds set by electronic thumbwheel; speed readout accurate to .001 fps; phase lock adjustment for TV monitor filming; programmed ramps at all speeds; iris compensation during speed changes (with optional iris motor); and variable speed while running (with remote speed control).

Single frame features include 0.3-second to 99.9-second exposure time in .1 second increments; intervals to nine hours; burst to 9999 frames; run mode (with or without interval and/or burst); double or triple exposures per frame with automatic exposure division; and capping shutter control with view button.

For information: Rotavision Camera Systems, 2313 West Olive Ave., Burbank, CA 91506, (818) 567-1399, FAX (818) 567-1320.

Sound Headset for Imax

Sonics Associates Inc. is currently readying a new sound system, the Personal Sound Environment (PSE), that is designed to augment the Imax viewing experience by giving the user three-dimensional sound through a lightweight, wireless headset. Used in conjunction with special 3-D and Imax SOLIDO glasses, the headsets will also bring a new level of authenticity to Imax 3-D motion pictures.

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etc.). The system can also convey the illusion of motion (such as a passing car) and immerse the listener in a particular sound environment. Three infrared receivers ensure uninterrupted sound quality no matter which way the head turns.

To address the needs of international markets, PSE offers a unique multi-lingual capability. In the Imax setting or in amusement park rides, the headset can produce four different languages simultaneously, allowing each listener to hear the presentation in his or her native tongue at the flip of a switch.

The first PSE system is scheduled to be installed late this summer at a Loew's theater in New York City's Lincoln Center.

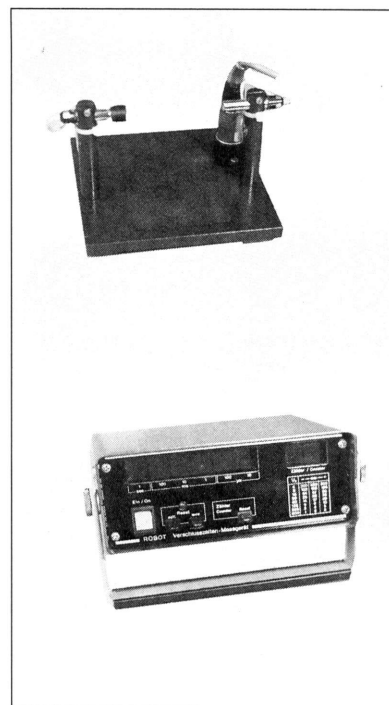
In addition to their affiliation with the Toronto-based Imax, which acquired an interest in Sonics in 1988, the company provides custom sound technology to a diverse range of locations, including amusement parks, stadiums, large corporate boardrooms and even churches.

For more information: Sonics Associates Inc., 2111 Parkway Office Circle, Birmingham, Alabama 35244, phone (205) 733-0500, FAX (205) 733-0569.

Digital Speed Tester

Consisting of a light beam and an electronic precision unit, the Robot speed tester measures shutter speeds of SLR or range/viewfinder cameras, as well as motion studies such as torque impulses, with an accuracy of .00001 second.

Mounted on an 8" X 10" platform with two vertical posts, the light beam has an opening diameter of 1mm, operates within the visible range, and is adjustable from 50-80mm to accommodate different-size camera bodies. If the beam is directed precisely to the center of the shutter, the instrument will indicate the exact shutter speed in LED digits after each release, ranging from $\frac{1}{100,000}$ to 9.99999 seconds. A digital counter records the number of readings from 1 to 99. Two push buttons permit deleting of both readings and counter figures to zero. A switch with a green test light offers either manual operation (with all results being added to each other, unless manually deleted, which determines average shutter speeds) or automatic operation (with each reading being



deleted by the subsequent one).

The gate time is quartz-controlled with a tolerance of +10 or -10 X 10^{-6} . The electronic unit has a high interference resistance with an on/off switch with red pilot light, and can be plugged into any standard 110-volt AC outlet (220 on request).

The compact (7 $\frac{1}{4}$ " X 7 $\frac{1}{4}$ " X 2 $\frac{1}{4}$ ") and lightweight (4 lbs.) robot speed testing unit with solid metal housing comes with a strong handle, suited for both inclined positioning and carrying.

For information: Heitz Service Corporation, P.O. Box 427, Woodside, NY 11377, (718) 565-0004, FAX (718) 565-2582.

Video Component Support

Matrox and Miranda's toccata-Pro from Miranda Technologies provides serial digital 4:2:2 input and output capability for the Matrox Illuminator-Pro videographics card, enabling video professionals to combine digital component video with true 24-bit color graphics with no signal loss or degradation.

Maintaining the integrity of the digital signal throughout production ensures image fidelity and eliminates the noise and signal distortion common in analog video devices. To achieve this, the toccata-Pro features two multiplexed serial 4:2:2 digital inputs and two serial 4:2:2 outputs; all inputs and outputs

meet SMPTE 125 and 259M specifications. Its 8-bit serial 4:2:2 architecture supports 525- and 625-line formats and CCIR 601 and 656 standards.

One key feature of the toccata-Pro is its auto-timing capability. Incoming serial digital signals that are locked to the Illuminator-Pro and within a window of +/-20 M seconds of the Illuminator reference will be automatically timed and synchronized. Grabbing an image is now much easier and does not require re-timing of the source. The inputs of the toccata-Pro can also equalize for cable lengths of up to 300 meters.

The Illuminator-Pro's on-board digital video blender, driven by an 8-bit alpha channel (or external key signal), combines the true color graphics with digital serial video, and its three analog inputs (Y/C or composite) remain active even while the toccata-Pro is connected via the Movie bus.

For information: Matrox Electronic Systems Ltd., 1055 St. Regis Blvd., Dorval, Quebec, Canada H9P 2T4, (514) 685-2630, FAX (514) 685-2853.

Editing System

Accom Inc. has introduced the Axial 2010 On-Line Editing System, with advanced compact design, powerful EDL and edit workspace, high-resolution edit display, NTSC/PAL switchability, and simultaneous control of 12 serial devices in any combination. The system also features user-definable menus and controls on the keyboard display, as well as exclusive caching functions.

For information: Accom, Inc., 1490 O'Brien Drive, Menlo Park, CA 94025, (415) 328-3818, FAX (415) 327-2511.

Digital HDTV Camera

Matsushita Applied Research Laboratory (MARL) has developed what is believed to be the first fully digital, high-definition broadcast-quality television camera. The development was accomplished in cooperation with researchers at the Image Technology Research Laboratory of Matsushita Electric Industrial Co., Ltd, one of the world's largest manufacturers of consumer and industrial electronics.

The lab's objective was to develop software algorithms and hardware architectures for next-generation professional HDTV camera processing. The pro-

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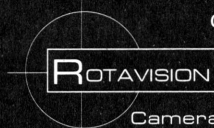


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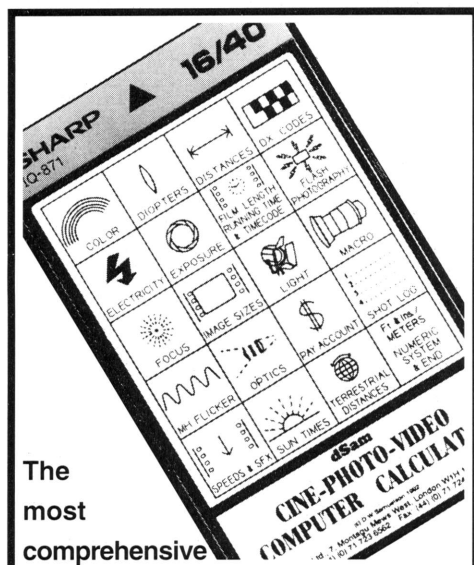
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totype camera, which is based on a digital video processor, is currently configured to operate on the HDTV studio standard (1125/60 Hz/interlaced) proposed by the Society of Motion Picture and Television Engineers for professional video production. The camera's processing architecture, however, can be easily applied to the emerging U.S. HDTV broadcast standard whenever it is formally set by the Federal Communications Commission.

The camera system is comprised of three main components developed in this effort. The camera head contains the circuitry for CCD timing and video signal recovery. No further video processing is done in the analog domain before the signal enters the analog-to-digital converters. The digital video processor is a 10-bit input/output pipelined with software processing and control functions. It includes analog-to-digital and digital-to-analog converters. Calculations for many of the video processing functions are done within the software of this unit. The master controller unit provides the user interface and displays the camera setup parameters and status.

The camera's digital processing provides operators with the advantages of electronic stability and repeatability. Such functions as shading, color balance, gamma correction, dynamic knees and edge enhancement functions are calculated more precisely and are more easily adjusted. Also, functions that are normally implemented in critical circuits in analog cameras are accomplished more precisely in the digital domain. They can also be modified instantaneously by the operator through the Master Camera Control Unit or automatically by means of software control.

Additional features of the HDTV camera include independent control of gamma and maximum gain of the gamma curve at black; dynamic contrast compression; adaptive horizontal contour generation; automatic pixel-by-pixel shading correction; modification of any color black level without affecting white levels; internal test signal generation; storage of multiple camera setups; and diagnostics.

For information: Matsushita Electronic Corporation of America, One Panasonic Way, 3C-7, Secaucus, NJ 07094, (201) 348-7320, FAX (201) 348-7579.

Digital Arri Controller

Arriflex is now beta-site testing a new digital product called the LCC, or Laptop Camera Controller, designed to provide the camera crew with complete, programmable control of Arriflex 16SR-3 and 535 camera systems and to enable the assistant to keep track of all film accounting information and reports, with automatic data entry from the camera. The software works on a Macintosh PowerBook.

The LCC displays the full standby or working status of the camera; both frame rates and shutter openings can be selected and stored. For the 535 the LCC allows the crew to create and edit any number of speed/shutter changes, and programs from auto-calculate to a graphical representation of the program. The Go To feature allows the crew to run the 535 forward or reverse to any particular frame. You can also create speed/shutter change programs on the 16SR-3 with the LCC and the new Iris Control Unit (ICU) which will maintain correct exposure.

It features a shutter icon on screen that shows the angle opening and turns when the camera is running, and is set up to program everything from film counters (take, total, frames and magazine) to controlling modes, running at 1fps, phase, time code, and more.

All film received, exposed and sent to the lab during production can be logged with the LCC. It has a received raw stock log, an available raw stock log, and an exposed film log. The LCC can receive footage information directly from the 16SR-3, 16SR-3 High Speed and 535 cameras, and automatically record and update.

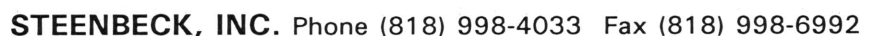
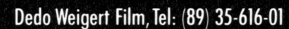
The user can print out a small camera report with scene, take, footage, total footage, "no good" and waste takes, FPS, shutter angle, interior or exterior, MOS indication, notes and any program the LCC executed during any specific take. One can also circle takes, reconcile Edge Numbers, and indicate whether a gate filter was used.

For information: Arriflex Corporation, 600 N. Victory Blvd., Burbank, CA 91502-1639, (818) 841-7070, FAX (818) 848-4028.

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Points East

by Brooke Comer

Has *The Age of Innocence* triggered a renewed interest in period films? That could be one of the reasons why the mid-Atlantic states are seeing an increase in production recently. It makes sense. Philadelphia, Delaware and Maryland are only two to four hours from New York, which means easy access to a network-level audio post house, or an established film lab, or casting directors, crews and equipment. • Philadelphia, home of the nation's most historic square mile, lent its Academy of Music for the opening opera scene in *Age of Innocence* and has always been sought after by filmmakers looking for historical vérité. The Liberty Bell and Independence Hall are requested on a regular basis, but **Sharon Pinkenson** of the Philadelphia Film Office points out that special rules apply to these areas. "Independence Hall can only be presented onscreen as Independence Hall," she explains. "It can't double for a courtroom in another city." Independence Park must also be presented as itself. One production came to town to shoot the Liberty Bell only to find it wrapped in scaffolding for the restoration it receives every 10 years. "Production managers and location scouts can save time by familiarizing themselves in advance with the special permits historic areas require," Pinkenson notes. Not all of the locales in the city identify Philadelphia as itself: *Anne Bonny*, *Mistress of the Seas* used old courtyards in the city to double for 17th-century Charleston. • Baltimore, Maryland hosts NBC's *Homicide: Life on the Street*, produced by **Tom Fontana**, Emmy-winning alumnus of *St. Elsewhere* and **Barry Levinson**, who won an Academy Award for Best Director on *Rain Man*. *Homicide* is a co-production of **Baltimore Pictures** and **Reeves Entertainment**. Contrary to the connotations the name evokes, *Homicide* is not a shoot-'em-up show, but more a tour de force of the detective world — specifically, the world of Baltimore's homicide squad. • Baltimore's proximity to Washington D.C. has given the area a strong production base for years,

with the influx of political commercials and corporate programming that D.C. generates regularly. The production services Baltimore offers for this market also help attract regional and national spots, features and series like *Homicide*. In most cases a network series shot outside Hollywood sends its audio post back to Southern California, unless an audio house in the area meets network standards. In this case, Fontana and Levinson chose New York's **Sync Sound**, the audio post facility that serviced a number of series, including *Tattingers*, as well as pilots for *High* and *New Year*. Sync services all of *Homicide*'s audio needs, from dialogue and sound effects to ADR and Foley work to final release on D-2. Sync attracts a spectrum of work that includes long-format programming, partly because of the facility's commitment to the latest gear. For instance, the facility's Semens Audio Logic-2, a large-scale digital mixing console with a built-in Audio-Spectra, facilitates the integration of editing and mixing in all TV, CD and film mixing formats. • Wilmington, Delaware's Playhouse Theatre attracts a significant show-biz population to town each year during the theatre's production season from September to April. During the off-season, the 1,250-seat Playhouse is sought as a shooting stage and rehearsal space by film, TV and commercial productions. Chicago's **Moon Dog Productions** filmed a corporate video on the premises, utilizing the stage and its black drapes. Broadway tryouts have graced the floorboards, bringing in stars like **Kathleen Turner** in "Cat on a Hot Tin Roof." • Most recently, **Fran and Barry Weissler** of **Weissler Productions** brought the musical "Grease" to the stage under the artistic direction of **Tommy Tune**. **Sara Lu Schwartz**, marketing manager for The Playhouse, notes that the in-house technical staff got "Grease" up and running and helped make the show a rousing success. "We have a professional crew with TV and movie experience, since there's so much shooting in the area," Schwarz says.

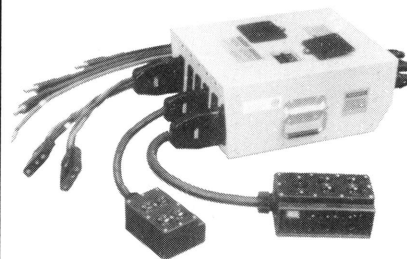
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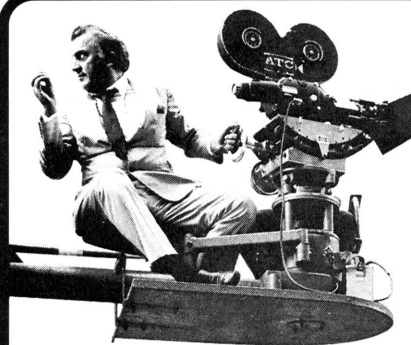
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Delaware, she points out, is within commuting distance from Philadelphia. It also sits midway between New York and Washington D.C., allowing filmmakers to avail themselves of the best of both cities. When Weissler Productions was in town, the producers found they could get all the technical support they needed in New York or D.C., a two-hour train ride away. • The Playhouse has a bonus attraction: its relationship to the historic Hotel duPont, the first luxury hotel to house a theatre. The theatre and hotel were built in 1913, and they remain sister businesses. The jewel-box design of the Victorian theatre, with its 76-foot-long stage, offers plenty of room to design a set. But after location scouts have snapped shots of the theatre, they don't put their cameras away; the hotel's interior, literally under the same roof, is equally film-worthy. • The Hotel duPont was built when the duPont company began attracting international corporate travelers, and thus needed a property on a par with the leading hotels in the world in terms of service and atmosphere. Today, the attention to detail and quality is obvious in the gold chandeliers of the Green Room or the murals of the Gold Ballroom. Women architects were rare in 1913, but **Pierre duPont** chose **Violet Terwilliger** to design the ballroom, which insisted on telling a story of love. Perhaps he felt this story could be more effectively conveyed by the feminine touch. • The Gold Ballroom is a salute to women throughout the ages — in real life, literature or mythology — whose beauty and power changed the course of history. The women are shown in sgraffito murals which took two years to complete. The sgraffito involved multiple layers of colored plaster which were hand-cut with special tools by a team of 30 Italian artists imported specifically for the job. "We do permit filming," says marketing director/film liaison **Carolyn Grubb**, "but if you want to shoot in the lobby, the best times are between midnight and 6 a.m., when it's not busy. Our lobby isn't that big, so depending on how much equipment and time is involved, a day shoot could interfere with our guests, which we don't like to do." The Ballroom, a popular spot for parties and receptions, is often booked far in advance. Grubb advises production managers to check its availability as soon as they have tentative shooting dates. ☞

Books in Review

by George Turner

The Sound of Music

by Julia Antopol Hirsch
Contemporary Books, 226 pps.,
paper, \$19.95

Books dedicated to the making of specific movies are always welcome in this corner. Some favorites, such as *Citizen Kane*, *King Kong*, *The Wizard of Oz* and *Gone With the Wind*, have been given the royal treatment more than once. Now *The Sound of Music*, the Academy's choice for best picture of 1965, gets the VIP treatment in a well-researched and handsomely illustrated oversized paperback that includes a foreword by the film's gifted producer/director, Robert Wise.

The author, a former story editor for Wise, conducted interviews with many members of the cast and crew and researched the production files from the Twentieth Century Fox archives to compile facts, figures and anecdotes. She covers the ground as thoroughly as the pages will permit, from preproduction preparation and screen tests through production in Austria and at Fox, scoring, postproduction, the New York premiere, the scathing opening night reviews by Crowther and Kael, and a "whatever became of..." wrap-up. The illustrations, in addition to studio stills, include many personal scrapbook photos, some Maurice Zuberano storyboards, and production correspondence.

The usual location imponderables — an extended rainy season, for example — are to be expected. It was not anticipated, however, that the downdraft from the camera helicopter would knock Julie Andrews down repeatedly during filming of the famous opening scene in which she runs to the mountaintop and sings the title song. Or that a noisy arc light used by cinematographer Ted McCord, ASC to provide a shaft of heavenly light for Andrews and Christopher Plummer during their "first kiss" scene would give the lovers a raucous Bronx cheer during take after take.

Even though some of the critics found the picture's sweetness and

light unendurable, the public welcomed it with open arms. Among other honors it earned five Oscars (including Best Picture) out of 10 nominations, the People's Choice Award, and Golden Globes for Andrews and for Best Picture; *Music* was also number one at the box office for five successive years.

The facts are nicely packaged and the reading is as pleasant as the movie.

The Diary of Jack the Ripper

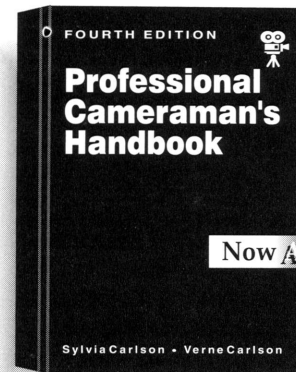
Narrative by Shirley Harrison
Hyperion, 324 pps., cloth, \$21.95

So many movies, including a couple of certifiable classics, have been inspired by the serial killer Jack the Ripper that we're stretching a point to take note of this controversial book in a journal devoted to cinematography. Whether *The Diary of Jack the Ripper* is the answer to the identity of the unknown man who terrorized London in 1888, or is just another hoax along the lines of the supposed Hitler diaries of recent infamy, is a current subject of debate. A parade of suspects has been offered during the past century, even including royalty and a famous artist, but never any genuine proof of the guilt of any of the suspects.

Such proof is offered by the artifact in question if it is genuine — and this is a big *if*. The diary was written in a scrapbook of the proper period, in ink of a kind that hasn't been manufactured since early in this century, allegedly by a Liverpool cotton merchant named James Maybrick. Six months after the last Ripper murder Maybrick died of arsenic poisoning and his unfaithful wife was imprisoned for the crime — unjustly, according to subsequent evidence that Maybrick was addicted to arsenic. Although Liverpool is 250 miles from Whitechapel, the scene of the crimes, the murders occurred on weekends when Maybrick went alone to London — purportedly to visit a brother, but in reality to see his mistress.

The book is in three parts, cov-

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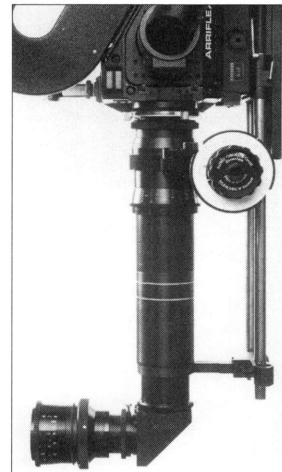
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ering the investigation of the diary, the diary itself (shown both in facsimile and a transcript), and the debate over its authenticity. There are plenty of pros and cons on the latter score, and the publishers have presented expert testimony for both sides. A reader may call it all a hoax at one moment and, upon reflection, think otherwise — or vice versa. Either way it makes for fascinating reading — and good grist for another movie.

I Was Interrupted: Nicholas Ray on Making Movies

by Nicholas Ray
and Susan Ray
University of California Press,
291 pps, cloth, \$25

A one-of-a-kind, rebellious, troubled and troubling maverick movie-maker haunted by booze, drugs, eccentricities, real and imagined illnesses and an unsparing intentness of purpose, Nicholas Ray managed to whelp a remarkable body of work. No director could have elicited a finer portrait of bedeviled genius than Humphrey Bogart gave in *In a Lonely Place*. And who could have made more explicable the anguish of the young adults played by James Dean and Natalie Wood in *Rebel Without a Cause*?

Ray's devoted wife, 40 years his junior, edited this book from his mostly unpublished writings, interviews and classroom lectures. Susan Ray's beautifully written introduction tells frankly of the idiosyncrasies that made Ray almost impossible to cope with, yet her love for him and his genius is always evident.

A product of rural Wisconsin, Raymond Nicholas Kienzle Jr. became Nick Ray, an actor of the left-wing Theatre of Action in New York, and later a theater arts director for the government. His work with John Houseman led to a seven-year writer-director stint at RKO Radio as a protege of Howard Hughes. In 1953 he left to free-lance, but his "brilliant but unreliable" reputation kept him from achieving independence. While working on *55 Days at Peking* in 1963 he was sidelined with a heart attack. After much roving he settled down to teaching. He died in 1979.

There isn't much information about his movies in this book, but it is filled with his ideas and philosophy about life and filmmaking. It's a fine piece of work.

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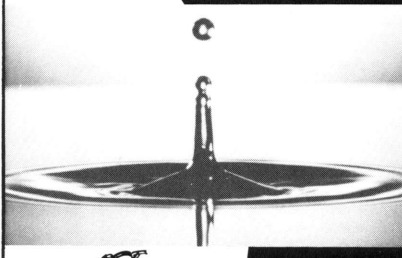
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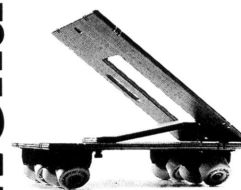
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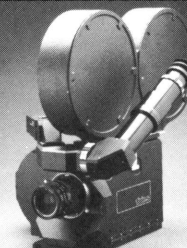
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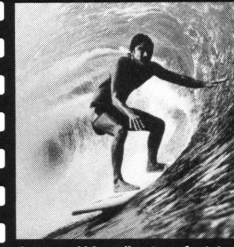
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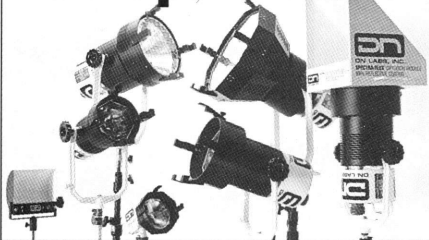
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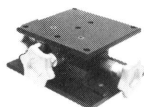
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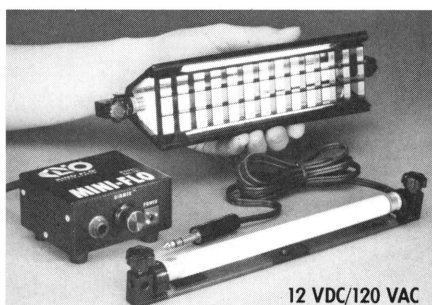
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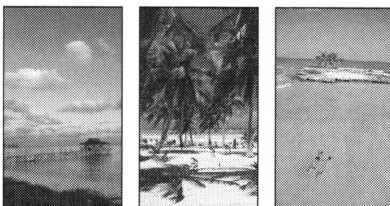
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From the Clubhouse



Sol Negrin, ASC was elected president of the International Photographers Local 644 of IATSE, the International Alliance of Theatrical Stage Employees and Moving Picture Machine Operators. As president he will oversee the executive board and general meetings and will be working to formulate educational programs and seminars for union members. Negrin, who was also president in 1974, will be serving a two-year term, from 1994 to '95.

...

The Hollywood Arts Council honored the ASC with its Hollywood Arts Award in recognition of the society's 75 years of art in film. The Council's 8th Annual Awards Luncheon, dubbed "The Charlies," was held on January 28 at the Hollywood Roosevelt Hotel and honored sponsors of the Arts Council's projects and those who have made meritorious contributions to Hollywood and its arts in 1993. Charlton Heston presented the award to ASC President Victor Kemper.

Other award categories include theatre arts, preservation arts, architectural arts, music arts, visual arts, cinema arts and media arts. Past award recipients have included Lily Tomlin, Art Linkletter and Martin Landau.

The Hollywood Arts Council is a non-profit community-based arts organization formed in 1978 to promote, nurture and support the arts in Hollywood. The Council's programs include a magazine guide to art venues and places of interest in Hollywood, the Children's Festival of the Arts, the Hollywood Bowl Art Fair, the Hollywood Arts Affair and art programs for youth at risk.

...

ASC members making an appearance at the ASC booth during ShowBiz East, which took place in Manhattan from January 6-8, were Sol Negrin, Andrew Laszlo, Richard Shore, David Quaid (who came in from Massachusetts) and Steven Poster. All say that they enjoyed speaking with the fans, stu-

dents and other visitors who stopped by to talk or to see a screening of *Visions of Light*. Attendance at the convention, located at the Hilton in New York City, was much more enthusiastic than expected considering the bone-chilling weather, and we'd like to thank everyone for their expressions of goodwill and support.

...

Fondly remembered ASC associate member Steve Chamberlain, a film technology historian and long-time employee of the Arriflex Corporation, passed away in mid-January. In lieu of flowers, donations are being accepted in the name of Stephen C. Chamberlain at: United Hospice of Rockland
5 Parkview Plaza
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...

The ASC Clubhouse and the *American Cinematographer* offices emerged unscathed from the geological unpleasantness experienced by Los Angeles in late January, although a utility pole on the property has developed a definite list. The rest of the neighborhood wasn't so lucky: our neighbors across the street are living on the lawn and the brand-new shopping complex around the corner has been closed — among other problems, the handrails have popped off the escalators, making it appear as if Godzilla and King Kong were having it out with giant rubber bands.

Except for a slight jitteriness that overcomes staffers whenever a large truck rumbles past, morale has held up, although we were slightly disappointed to find that a particularly cantankerous computer of ours was not smashed to smithereens.

If you're interested in contributing to a relief fund for the less fortunate, please make checks out to the Red Cross Disaster Relief Fund and mail to: Los Angeles Chapter, American Red Cross, 2700 Wilshire Blvd., Los Angeles, CA 90057.



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March 1994

American Cinematographer

111

Reply to "Directors of Digital Production"

(*Wired Magazine*, December 1993, page 58)

by Steven Poster, ASC

In December I read an article in the magazine *Wired* -- in general a very good publication with exciting news of current trends and future technologies -- that really got my back up.

The piece, "Directors of Digital Production," focused on Scott Billups, an acquaintance of mine who is at the forefront of digital production. The writer, Daniel Todd, made some statements and attributed quotes to Billups that could have led uninformed readers to believe that the motion picture industry has been ruined by lazy, overpaid laborers, and will be saved by small groups of "techies" making movies in their basements at virtually no cost.

There is one statement I would like to address to both my friend Scott Billups and to Daniel Todd: "Large crews of unionized workers building sets and rigging lights" *did not* drive the Hollywood dream machine of yesteryear. It was pervaded by much darker forces that will continue to influence the production of digital movies.

The tools, materials and labor necessary to make a motion picture are far less complicated to understand than the clash between the creative process and business necessities. There is, however, a kind of magic that happens when real actors interact in real situations which have been staged, lit and photographed on film through a collaboration of many artists and craftspeople.

The magic is the outcome of the entire gestalt that is put in motion at the beginning of production and which continues until the movie's release. The process is one of order over tumult and contributes to the final result on the screen.

In the case of digital simulation of motion pictures, the entire manufacturing process is different. Just a few people create the entire product, and their sole assistance comes from some very sophisticated but affordable com-

puters. Actors are sometimes used, but they often merely simulate interaction with their environment. The storytellers involved are often (unlike Scott Billups) not from a background of traditional filmmaking; they are "techies." There is undoubtedly some exceptional work being produced, but some element of magic is missing.

I have frequently been consulted about the lighting of CG projects because the producers and director knew that some crucial element was missing. If I shoot live action that will eventually be blended and altered with CG, I always make sure my lighting will fit into the work to come. I try to show up while the computer work is being done so that the designer will understand my work.

Even though the motion picture produced solely via digital technology isn't yet ready to overtake a movie achieved by traditional technology, its time is quickly coming. The work Scott and others are doing is just scratching the surface of the medium's potential.

The future, we can only predict; the past, we can learn from. The first lesson to learn is that new technology doesn't always kill old technology. The two are usually blended synergistically to create an entirely new medium, or they can exist side-by-side, adding to the rich panoply of entertainment available to the public. In effect, the skills used today in manufacturing motion pictures will still be needed for a while.

The second lesson has to do with the union dance that Scott talks about in his final solution (oops, I mean his long-term vision). Unionism came about in the motion picture industry because of the extreme exploitation of its workers that still goes on today with many non-union productions. Crew members are forced to work very long hours without decent compensation in unsafe or unhealthy conditions, and aren't even given proper rest between work periods.

1993 was one of the best years ever for Hollywood, but here is the proof that trickle-down doesn't work. The Hollywood technician is being squeezed to do the job with less help, less pay and reduced health and pension benefits. When workers don't receive benefits, long-term illnesses and pensions are paid for by the state -- that's us, Scott. When the non-union workers of today get older and look for the kind of support provided by union benefits, we'll all be in big trouble. Greed, rather than the unions, drives "the big Hollywood machine" that you believe is toppling.

Let me ask you, Scott, have you ever looked at the contracts you are asked to sign? They own everything, don't they? There is probably even a vaguely worded indemnity clause in each contract, meaning that "they" have the right to get rid of you but you can't get rid of them, except by way of a whopping lawsuit and the promise that you will never work in this town again.

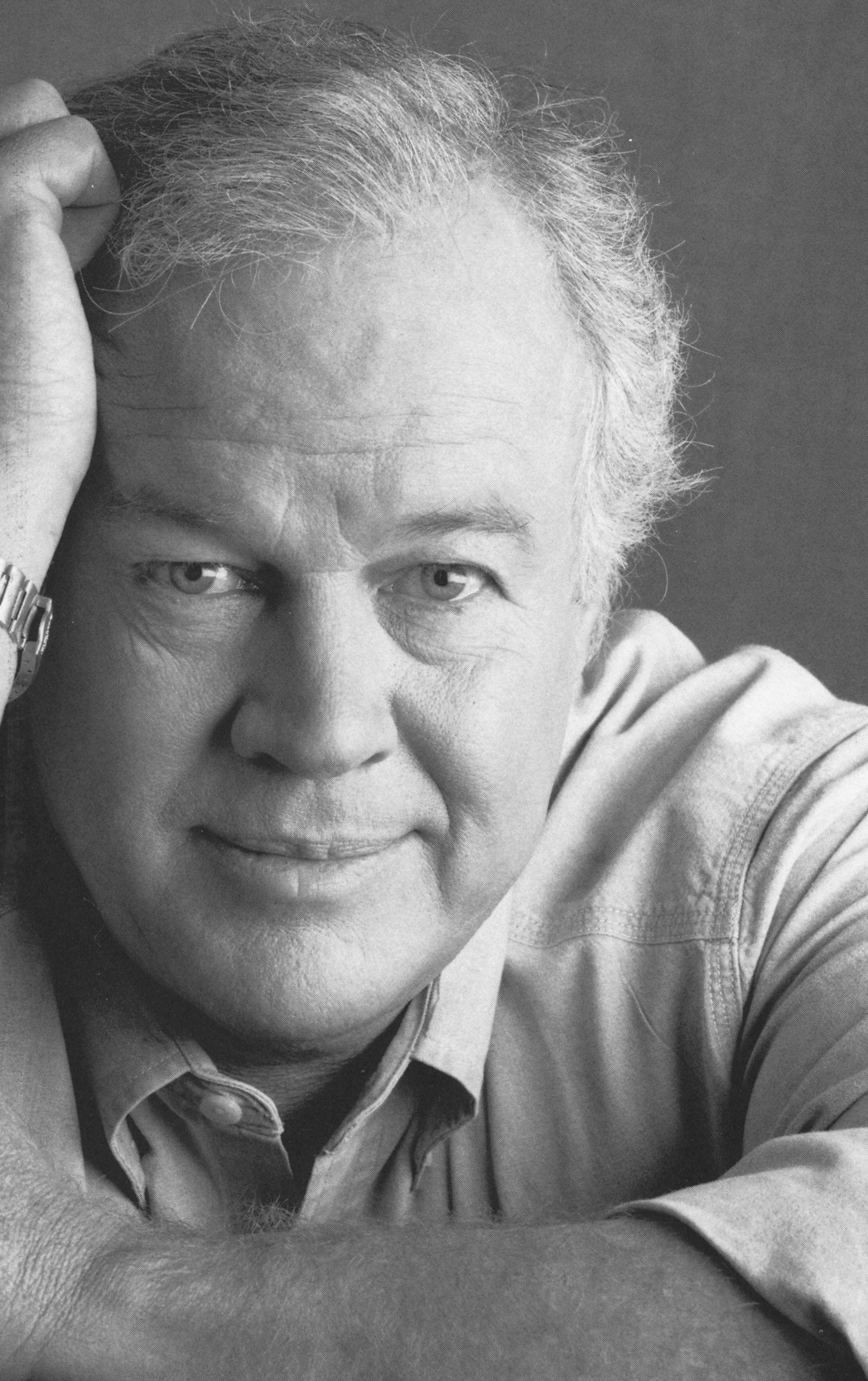
The time will come, after suffering enough egregious exploitation, when a group of artists like yourself will want the protection of collective bargaining. It's the "nature of the Biz."

It may take fewer people to make the kind of movies you write of, but it will still take people. You will have the equivalent of the best boy, the focus puller "and all that," as you say. But these people will want the same things that laborers in the industry want today: equity and the promise of a good life in return for their hard work.

Scott, you will add greatly to the library of "rich, visual stories." But tell the truth -- don't you like working on the really big projects? The thrill of making the next *Blade Runner* or *Close Encounters* is what drives filmmakers. Admit it, you want your piece of the fantasy pie. And you deserve it.



douglas trumbull on film:



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Douglas Trumbull was a special photographic effects supervisor for "2001: A Space Odyssey," "Close Encounters of the Third Kind," and "Blade Runner," and producer and director of "Brain Storm." He is also the inventor of the Showscan process and creator of the movie ride concept.



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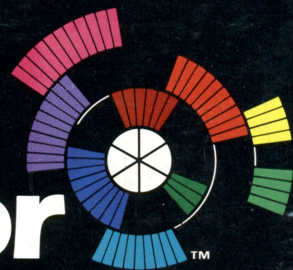
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